UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
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MEETING: PLANT LICENSE RENEWAL
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Conference Room 28-1
Two White Flint North
11545 Rockville Pike
Rockville, Maryland
Thursday, November 18, 1999

The committee met, pursuant to notice, at 1:01 p.m.

MEMBERS PRESENT:
MARIO V. BONACA, Chairman
DANA A. POWERS, ACRS Chairman
THOMAS S. KRESS
JOHN J. BARTON
JOHN D. SIEBER
GEORGE APOSTOLAKIS
ROBERT E. UHRIG
ROBERT L. SEALE.

P R O C E E D I N G S

[1:01 p.m.]

DR. BONACA: Okay; this meeting will now come to order. This is a meeting of the ACRS Subcommittee on Plant License Renewal. I am Mario Bonaca, the chairman of the subcommittee. ACRS members in attendance are Bob Seale, George Apostolakis, Thomas Kress, Dana Powers, William Shack, Jack Sieber and Robert Uhrig.

The purpose of this meeting is to review the resolution of the open and confirmatory items identified in the safety evaluation report related to the license renewal of Calvert Cliffs Nuclear Power Plants I and II and the status for activities associated with the standardization of the license renewal process. The subcommittee will gather information, analyze relevant issues and facts and formulate proposed positions and actions as appropriate for deliberation by the full committee.

Mr. Noel Dudley is the cognizant ACRS staff engineer for this meeting. The rules for participation in today's meeting have been announced as part of the notice of this meeting previously published in the Federal Register on October 25, 1999. A transcript of this meeting is being kept and will be made available as stated in the Federal Register notice.

It is requested that speakers first identify themselves and speak with sufficient clarity and volume so that they can be readily heard. We have received no written comments or requests for time to make oral statements from members of the public. We will now proceed with the meeting, and I call upon Mr. Christopher Grimes to begin.

MR. GRIMES: Thank you, Dr. Bonaca.

I would like to start off by explaining that the purpose of this meeting is for the staff to describe how we address the resolution

of the open and confirmatory items in the Calvert Cliffs license renewal safety evaluation report. As you know, one of those open items, 3.0-1, related to the treatment of FSAR changes to incorporate the committees from BG&E to manage aging effects. We have been tracking that issue separately.

BG&E submitted by letter dated November 12 a proposed list which was one of the four options that we described to BG&E at the management meeting in August. The staff is in the process of verifying that that list captures the commitments that were relied upon by the staff to establish reasonable assurance that aging effects will be adequately managed and that we would incorporate those into the safety evaluation and then reference them in a license condition.

We have scheduled a meeting with Baltimore Gas and Electric on Monday, November 22 to continue a dialogue on how the mechanics of that process would work and also to discuss the results of our initial review of the list, but it shouldn't affect the explanation about how we've addressed the resolution of open and confirmatory items otherwise, and we still need to work out some of the details about the construction of a renewed license and the preparation of a commission paper that would incorporate the results of all of the renewal activities.

For the balance of our presentation, we're going to have the staff explain the balance of the open and confirmatory items and how they've been addressed in the final safety evaluation, which was issued -- what day is this? -- the 18th, two days ago. My, how time flies.

But as requested by the ACRS, we are also prepared today to discuss a number of other generic renewal activities and how we're proceeding with those issues, and we're prepared to discuss a comparison of the treatment of particular issues of interest between Calvert Cliffs and Oconee; in particular, cast austenitic stainless steel fatigue and one-time inspections, and I would ask that as a plan for the outcome of this meeting, you also think about what particular aspects of these presentations you would like us to prepare for the full committee meeting on December 2.

And unless there are any general questions about our objective today, I'll turn it over to David Solorio, the project manager.

DR. BONACA: Just one question I have which I may raise later on, but as you know, one interest that I have expressed was in the process that the staff will use to participate in changes to those commitments that you received as a supplemental ACR, and we can discuss it later on, probably when we come to the one-time inspections.

MR. GRIMES: Well, as a prelude to that, I'll mention that it was our vision that the age-related degradation inspections, like the rest of the commitments that BG&E has offered in this application are intended to be incorporated into the final safety analysis report, and we would expect that for the age-related degradation inspections, there is also a feature in the proposed license condition that provides a mechanism for delays in the commitments; that is, a time factor that is not presently addressed by 50.59. But otherwise, we would expect that 50.59 processes would control changes to the commitments.

It's conceivable that in the future, some of the one-time

inspections proposed for ARDI, the acronym for age-related degradation inspections, might change. If the substance changes, then 50.59 would evaluate whether that substance change warrants a license amendment. If there are delays, then, the license condition provides that any delays in specific schedule commitments would also be subject to a license amendment, so that's the staff involvement that we anticipated in changes to these commitments.

DR. BONACA: And we can discuss it. One of the reasons why I raised the question before is because I look for the -- and I'm not sure that the recently-developed guidance on 10 CFR 50.59 contains all of the elements that you need to perform evaluation of commitments in the license renewal area. It may contain them all, but I'm not so comfortable or confident, and I wonder if you are going to perform a review of that guidance and see if it accommodates all of the possible situations that you may face in -- when changes are made to the commitments.

MR. GRIMES: I understand the issue, and we are going to put -- we are going to continue a dialogue with the industry in terms of whether or not the 57.1(e) guidance and the 50.59 guidance --

DR. BONACA: Yes.

MR. GRIMES: -- are sufficient for the purpose of aging management programs.

DR. BONACA: Yes.

MR. GRIMES: But very simplistically, we view these commitments to be proposed changes in procedures and practices that are comparable to maintenance activities for active components but specifically designed for passive components.

DR. BONACA: Yes.

MR. GRIMES: So that we don't view the resolution of that guidance as being critical to proceeding with license renewal reviews.

DR. BONACA: And I agree with that, but I just -- I think that realizing that it took 40 years to get a guidance in place for 50.59 for the standards for the FSAR, I mean, I think it may be worthwhile to spend a bit of time just reviewing to make sure that all that you need to participate meaningfully in changes to the possible commitments for license renewal is in place. I mean, just a thought.

With that, I would like to proceed with the presentation.

MR. SOLORIO: Good morning or afternoon. My name is Dave Solorio, and I just want to inform you all of kind of how we're going to run this. I'm going to ask different reviewers from different branches to come up as we're going through to sit back over here on the side so that if any specific questions come up beyond my general knowledge, they're right here to be able to answer them for you. So please forgive the moving around that might occur.

So, with that, I'll get started. Today, I'm going to be making the presentation throughout, but I'm going to have representatives from the Division of Engineering, Safety Systems Analysis, my division, and Inspection Program Management. These are the divisions who worked with us here at the NRC to review this license application, renewal application, and to come up with the safety evaluation which we issued on the 16th.

The culmination of this safety evaluation report has been the result of a significant amount of staff and applicant resources. It's been a lot of hard work to get this thing done, and we appreciate you all trying to accommodate our schedule of trying to get your review. Back on November 3, we provided you all with a summary report of the closure of the open and confirmatory items. That was predecisional information at that time because we hadn't completed all of the management and legal reviews. We obviously have, since we've issued the SER now, but I need to ask you that that's still -- there were some minor changes, so that represents predecisional information that you need to keep, you know, to yourselves and not distribute.

But there was really no significant changes, so the content of the technical information that -- what you have there is essentially what is in the published SER, which I'm going to get some copies for you all as soon as I get done burning them at the copy center, so you'll have them probably when you get back to where you are going. And again, we issued two days ago the safety evaluation report.

I'm going to skip the next slide. It's just a summary of the different divisions that are going to be speaking and kind of the order. I tore these apart, and they stuck back together again. This is a little bit out of order, and the reason I'm putting this up first is because it kind of sets the prelude for a lot of the other things we'll be talking about. It's a chapter tree type item, and you, Dr. Bonaca and Chris Grimes were just talking about that. This was an open item we had. We wanted the licensee to commit to selective elements of their Appendix B program to be applicable to the non-safety related components that they were determining were in the scope of an aging management review. We asked for that commitment, and they agreed to either put it in their UFSAR or their site corrective action document, and because of that, we were able to close that item.

DR. APOSTOLAKIS: Now, what do these non-safety related components do?

MR. SOLORIO: Well, remember there are three reasons why -- or there are two reasons why you can get non-safety related components subject to an AMR: if their failure could affect a safety-related component or if they are perhaps part of one of the things that's necessary to meet one of the regulated events under criterion 50.4.4(a)(3), so it could be -- it's an example of what would be perhaps some feed water components. They might determine within the scope of an aging management review, so they're going to -- and they committed in their license renewal application to do this, to apply these specific Appendix B requirements to those components.

DR. UHRIG: Well, the components specifically mentioned here are those subject to aging management review.

MR. SOLORIO: Yes.

DR. UHRIG: Isn't that the primary criterion?

MR. SOLORIO: That's the primary criterion; I'm sorry; I didn't make it clear.

DR. APOSTOLAKIS: Why aren't they, then, safety-related if their failure can affect the function of a safety-related SSC? Why are they not safety-related?

MR. SOLORIO: Well, under current operating space, you can call it, there are safety-related and there are non-safety related. We're talking about managing aging effects for, in this case, non-safety related components, and they're managing them. The rule doesn't have us reclassify stuff as safety-related because it could affect a safety-related component. It just asks for us to make sure that they're managing it, and that's what they've done through their -- you know, they've explained to us that scope of stuff that they're going to manage that's not safety-related.

DR. KRESS: Part of the leftover from the way you've always done things.

DR. APOSTOLAKIS: I know, but it makes sense in some things, and it doesn't make sense in others.

MR. GRIMES: Dr. Apostolakis, the construction of the license renewal review recognizes that there are non-safety related structures and components that are relied upon in the regulatory regime. I think a good example is fire protection or station blackout. Those are two of the regulated event. And to the extent that they're non-safety related, but we still rely on them to perform a safety function. In this case, fire protection and station blackout are related to risk insights.

DR. APOSTOLAKIS: Yes, I'm not questioning why you're doing it. I'm just questioning why they are declared as non-safety related in the current regulations. And the next thing I'm curious about is we've heard that the South Texas project has identified 366 non-safety related components that are risk significant, and I'm curious now how many of those are part of the same ones that you are reviewing. But that's not for you to answer.

MR. SOLORIO: Thank you.

[Laughter.]

DR. APOSTOLAKIS: That would be what? You are very welcome.

DR. BONACA: Just the question I have regarding the resolution of incorporating the non-safety related components into Appendix B, is it going to be a general approach to how this issue is going to be dealt with with NEI, or has it been discussed or --

MR. SOLORIO: Well, I want to clarify one thing. We're not asking them for a commitment for all of the criteria for the Appendix B program but three specific ones: corrective actions, administrative controls and confirmatory processes.

MR. GRIMES: And the answer to the broader, generic issue is yes, I would expect to engage NEI as one of the lessons learned to develop guidance that could be incorporated either into the application guidance or into the review guidance.

DR. APOSTOLAKIS: Okay.

[Pause.]

MR. SOLORIO: Now, we're moving into chapter 2. It dealt with scoping, and we had a number of open items and confirmatory items, the first being the station blackout building, diesel building. We were -- during our review, we had determined that there was a potential based on what we read in their UFSAR that there was an implication that this building could affect the diesel generator building, so we wanted to --

we asked the applicant, you know, why isn't it in the scope of license renewal? We've worked with them on this quite a bit, and we also issued a scoping position in order to help get closer to a resolution on this item, and based on our interactions with the applicant, BG&E, they agreed that this part of the building, the part that could affect this diesel generator building, should be subject to an AMR.

They should be within scope and therefore subject to an AMR, and so, they've scoped it in, and actually, they've given us information related to the aging management review that we've also incorporated into the final SER.

DR. APOSTOLAKIS: Isn't this an example of what you've just mentioned?

MR. SOLORIO: Non-safety related?

DR. APOSTOLAKIS: DIPM. Is that a safety-related building?

MR. SOLORIO: It is, it is a safety-related building.

MR. ELLIOT: It's an example of a non-safety related.

DR. APOSTOLAKIS: Yes, so, it's an example of what we were just discussing; okay.

MR. SOLORIO: The other next open item here is a non-safety related service water turbine building header. There was a part of the service water piping that the applicant was not -- had not considered as scoping within the license renewal scope, and we asked some questions, and we had a lot of good interactions, and they determined that it was -- they agreed with us that it should be, and it was already very easy for them to incorporate the aging management review, because they were already looking to other parts of the system. They just added it.

And the next item there is the -- had to do with some spray nozzles and some charcoal filter beds, and we had questions whether or not those nozzles should be within the scope of license renewal. It was based on an understanding that we had had related to more or less other plants, where there might be an implication they should have been, but in this case, BG&E explained to us that they didn't perform any design basis function for putting out a fire in these charcoal beds, so we determined that they were not within the scope of license renewal based on that additional information that BG&E provided us.

And then, there was another non-safety related HVAC ducting area that was providing some air to some of the reactor cavity areas, and we initially thought perhaps that should be within the scope of license renewal. However, the applicant explained to us that it wasn't relied upon for meeting any design basis, and this is also tied into a scoping position that we issued on how to deal with considering things that aren't non-safety related and how far do you go before you say that's enough in terms of what are the effects on, you know, how far do you cascade down before you say look, we need to draw the line and say that's probably not a problem with that and let's stop.

DR. APOSTOLAKIS: So how far down do you go?

MR. SOLORIO: Well, it really is kind of a case-by-case situation. You've got to look at what the design of the -- you know, what's it serving? Is it providing normal operating error, and during an accident, it's not needed, so therefore, that's not -- you don't need to go that far; it's not needed for the accident.

I didn't answer your question.

DR. APOSTOLAKIS: No.

MR. GRIMES: Let me try. In this particular question, it was whether or not having ventilation to maintain the environment is necessary in order to ensure that the equipment remains qualifying. We faced a similar issue in technical specification, and we determined that there is sufficient basis for environmental qualification that we do not have to establish regulatory controls on how the environment is maintained. Plants can deal with environmental changes to determine what their impact is on the qualification of particular equipment, as in a degraded or a nonconforming condition in the event that they lose ventilation, or they lose environmental controls related to high humidity, things like that.

So in this case, we concluded that there was no need to cascade to the ventilation system in order to ensure that equipment's EQ is maintained.

DR. BONACA: In this specific case, it doesn't mean that in other cases, you may not find it in the cascading, right? If the function really was affected.

MR. GRIMES: It depends on the way in which the function will be affected and the time and the kind of response that we would expect. You know, for supporting systems, like cooling water for diesel generators, you know, it's got to be there when you ask it to be there. It is essentially a case-by-case review in terms of how far you cascade. For our purpose, it was sufficient and simple to simply look back to the licensing base and determine whether or not those functions were relied upon in order to demonstrate the licensing basis.

DR. APOSTOLAKIS: I guess there is a lot of room for interpretation there when you say relied upon.

MR. GRIMES: That's really at the heart of the cascading issue.

DR. APOSTOLAKIS: Right.

MR. GRIMES: What does relied upon mean?

DR. APOSTOLAKIS: Exactly.

DR. SEALE: There is a problem that recurs when you start examining any fixed array of topics to see whether or not you meet certain criteria, and that is that you always wonder and indeed suspect that you really aren't complete when you do the first run-through, and I guess from what you guys said, that's sort of the way it worked out, that the applicant submitted a list, and you suggested maybe one or two or three other things that ought to be added to the list and negotiated, and you got the answer or you got an answer.

But it's not clear that that is, in fact, the complete list. I mean, it may well be that there is another item or two that should have been added on, and you may find those as you go through and look at subsequent applications from other people. Is there a vehicle by which you can remedy this particular situation without getting egg all over your face?

MR. SOLORIO: I guess my first answer would be we also have an inspection program. We've made three inspections, or we're going to make the third one, but we've made two at Calvert Cliffs and two at

Oconee. We're getting ready to do a third one at Calvert Cliffs. But it's my understanding also that the region is going to revise their inspection program to, on a continuing basis, kind of factor in the license renewal aspects into their core activities. So that's another look-see that we will have.

DR. BONACA: One good example of what Professor Seale brings up is the alternative stainless steel and how, at the beginning in the first pass, it was not addressed in the context of Calvert Cliffs and then was picked up for Oconee and now also was raised for Calvert Cliffs. Now, there may be issues of this nature that will come up, and so, the issue that is being raised that I think is significant is how do you go back and capture these at a later time?

MR. GRIMES: I've been advised by counsel that there is a provision in the regulation that says that there is an obligation on the utility to maintain the plant consistent with the evaluation. If they discover later that they should have been something that was subject to an aging management review or if they modify the plant design in such a way as to now change the nature of what should be subject to an aging management review, they have an obligation to fix it, and, of course, if we discover that we've made a mistake, there are means for us to go back and correct our mistakes or to decide on how to back-fit any license when there is sufficient cause.

DR. SEALE: So there are provisions to do that, and you don't have to stand around arguing about whether or not you have the power to do it. You can.

MR. GRIMES: That is correct.

DR. SEALE: Okay; that's fine.

DR. BONACA: Okay.

MR. SOLORIO: And the other thing I want to mention here is -- I didn't mention it when I started out. What I'd like to do is kind of from each group, give some top issues, like I just went over some top issues for the scoping area. These are a couple more issues, and this list is real short, so I can go over this, but the lists are going to get longer in some of the other branches; you know, we'll have some top issues, then, I'll put up a list like this, and I guess I would ask you all if you have any other burning desires to talk about the specifics of the longer list, you can ask, and then, we can try to field that.

In this case, electrical commodities, there was a question about a table in chapter 6.2 of the LRA pointing to different locations of the LRA for incorporating some of the components in those other systems, and there was confusion, and the staff asked, and the applicant clarified the confusion for us. There were some few pointers that needed to be tied up.

The last item deals with the solenoid valves, and we were asking in the safety injection system, why weren't they within scope, and the applicant clarified for us that they weren't relied upon for process flow; they were relied upon for an error system that was a non-safety related system which whose failure did not impact the safety-related function or other systems, so it didn't affect it; it wouldn't be an affect on the SI system, because the valves that it was working with were in the fail-safe type valves.

Okay; now, I'm going to ask for EMCB people who are here today to come up here and sit over here in case there are any more specific questions that you can quickly get to a mike. Barry, Allen; I'm going to -- yes, I'm going to have them walk over to a mike or something. Can I put one of these away so they can just pass it up and down?

[Pause.]

COURT REPORTER: It doesn't amplify.

MR. SOLORIO: Okay; guys, I'll hand you this if you need to talk. Just make sure you talk loud enough so everyone else can hear.

[Pause.]

MR. SOLORIO: Some of the more significant items we dealt with for the materials area had to do with casts and small bore piping. Initially, we had done a lot of work with the applicant on this one. Prior to issuing the SER, we even went to the site to talk a lot about how to deal with this. In issuing the final safety evaluation, we just needed to work out some more details with the applicant agree what kind of once they determined what was going to meet the screening criteria, you know, what was the next step after that? What would be the approach for evaluating those components that met the screening criteria? And with respect to small bore piping -- sure.

DR. SHACK: You have a stress screening when it's subject to thermal and neutron approval and if it's going to allow -- the stress is just going to be subject to thermal. That's the rationale.

MR. SOLORIO: First, state your name.

MR. HISER: This is Allen Hiser. I'm with NRR. Actually, that was not something that ever came up in our discussions with them. I think the cast components that are in the internals will have significant -- well, they'll have significant fluence, so they probably will not screen out into that sort of a condition.

MR. ELLIOT: This is Barry Elliot. I think the piping material --

DR. SHACK: Is it going to screen out by stress?

MR. ELLIOT: No, I was thinking that it's valve bodies and pump casings which might. You know, it may well -- internals, yes, it probably will stress just like anything else.

DR. SHACK: That's why they went down that path. They figured that internals have very low stresses, and they could buy something from that. They didn't think they could buy anything from doing that for the piping. We allow them, though, on the pump casings to use code case 481, which gives you a fractural mechanics evaluation to eliminate the inspections.

[Pause.]

MR. SOLORIO: The next item on this slide -- just go ahead and hold onto that, would you? The next item on this slide, small bore piping, we had initially asked some questions on this part in the draft or the SER with open items, and the remaining questions we had in trying to close this issue out were that because of the potential for cracking, we thought that a one-time inspection wouldn't be appropriate. We had a lot of interactions with the licensee on this one, and eventually, we were able to understand each other, and they agreed that it would be

something they could do a one-time inspection for selected piping, small-bore piping, and we were able to close this item.

DR. BONACA: Okay; now, I have a couple of questions. First of all, so, you have agreed to have a one-time inspection, and you have agreed to that for a number of systems outside of the small bore piping; for example, the external components of the feed water system and CVCS system and then SRWS, okay, a number of component systems.

MR. SOLORIO: Yes, sir.

DR. BONACA: And now, again, if I understand it, the presumption is you have accepted one-time inspection because this degradation mechanism or the effects of it are not expected to happen. Therefore, you're looking at it once to confirm it, right?

MR. GRIMES: We've accepted the concept of one-time inspections in a process way to confirm or deny whether or not there is an effect that has risen to a level -- not that it won't happen, but has it happened to an extent that it needs to be managed, and we're relying on the process, which includes an Appendix B review of the results and a determination of whether or not the results warrant some further action to preclude a condition from occurring.

DR. BONACA: Yes; but I've seen the words not plausible, and I believe that's the basis for -- I mean, you go, and you accept one-time inspection because you don't believe that the effects are going to be either present or significant.

MR. GRIMES: Right.

DR. BONACA: Now, you may be disappointed by their inspection, okay, at that time, and if I understand it, you do have a process by which, then, should you find that the effects are significant, then, you would go and allow for additional inspections or a full new program. Now, this would be deemed by the applicant? I mean, who would determine that program at that time?

MR. GRIMES: The applicant makes the initial determination on any findings associated with inspection activities. We perform inspections to monitor how those processes work.

DR. BONACA: Okay.

MR. GRIMES: Whenever our inspection activities or our event evaluations identify conditions that we believe warrant some action, regardless of whether or not the utility has taken an action or not, we have a mechanism in order to pursue that and develop generic safety issues or to develop bulletins or orders or whatever it is that we need to do.

DR. BONACA: And again, as you said before, you can exercise 50.59, or the licensee would exercise that?

MR. GRIMES: The licensee would exercise 50.59 to make changes to their procedures and their programs and to -- and if that change rises to a level that warrants a license amendment under the criterion 50.59, then, they have to submit a license amendment.

DR. BONACA: But you will have access to this information as the inspections take place.

MR. GRIMES: That is correct.

DR. BONACA: Because I think that for license renewal, it seems to me that the collation of information, dissemination of

information to the industry is going to be a key issue. So you want to have a vehicle there that is fully open to learning and disseminating information.

MR. GRIMES: You have to be very careful there, because we also struggle under a requirement that says that reporting burdens by licensees have to be justified because we do something with the particular reports. So, and we also have a new oversight process that says that we have targets that we -- targets of opportunity that we use in order to perform our inspections.

So we rely on the process to tell us about the results of these activities when they rise to a level of significance, and we'll also have inspection activities that are going to go out and look for experience and pursue this experience and try to develop a feedback mechanism, but like the issues that have been raised with equipment reliability data, you know, there is still a struggle that we go through there in terms of whether or not there is a means to report and collate and trend and that sort of thing.

DR. BONACA: Now, in some cases, it seems to me that one-time inspection were proposed because of the locations which were not very easily accessible or some of that, and you did not accept that in most cases as a basis for just going with one time inspection. For example, I noticed that you asked the certain components of the spent fuel pool cooling system go into the BACI program, which is the boron, okay?

So, what I'm trying to understand is that this criterion of accessibility is not the basis for one-time inspection ever, is it?

MR. GRIMES: No; we rely on a process that says that they find results from accessible inspections, and then, they have to evaluate the implications for unaccessible components that could be similarly affected. So there, again, we're relying on a process to perform an evaluation to determine whether or not buried components or embedded components are implicated by the results of inspection activities.

DR. BONACA: Okay.

MR. GRIMES: The one-time inspections are to verify the lack of something that needs to be managed.

DR. BONACA: Okay; and I agree with that philosophy.

MR. GRIMES: Feeling all that Stephanie is under, because we're going to go into some more detail on one-time inspections.

DR. BONACA: Just I had one more question, and that's just for my education. I'm not a mechanical engineer. The question that I have is that there is a lot of reliance throughout the application on volumetric inspections, okay, ISI for ASME Section 11, and, of course, there is the periodicity attached to that, which is 10 years. Is the periodicity in any way tied to the original license of these plants, which was 40 years, or would you expect that, you know, a volumetric inspection every 10 years would be good as a period of time, irrespective of the aging of the plant?

So if you go to 200 years, I'm not proposing they will do that. Would it still be that you think that a 10-year interval is adequate? I don't know; I mean --

MR. GRIMES: Yes; I'll take an initial shot, and then, I'll ask Keith to comment.

DR. BONACA: Okay.

MR. GRIMES: The evaluation basis reflects back on how -- in-service inspections and how Section 11 of the ASME code, how it has performed in terms of finding and fixing things. You're correct in that ASME code originally set up 10-year cycles with an anticipation that everything would get inspected during the life of a plant, and so, there is a loose relationship there, but I would also point out that through some other mysterious way, the international community has decided that a 10-year cycle is appropriate for periodic safety review, so there is something mystically magic about 10 years seems to be a good cycle number for inspections.

DR. APOSTOLAKIS: That's not surprising, though. We're talking about non-risk informed regulations. They are mystic and magical.

[Laughter.]

MR. WICHMAN: Keith Wichman, NRR. There's nothing particularly magic about that extra 20 years, okay? And in our review, it really hasn't been established that there is a need for reducing that 10-year interval, okay? There are supplementary inspections like you hear today, like the ARDIs and other things that seem to take care of the questionable areas, okay? But we have not established a need for reducing that inspection interval.

DR. BONACA: I just asked the question because I didn't know exactly where the 10 years came from, and that's true that we have no experience that would suggest that you have to step up that interval, but, you know, we are learning things; for example, I know about this environmentally-assisted fatigue issue that we'll be discussing later on that shows that things change between 40 years and 60 years of life, and that's why I asked the question. But you feel that you have sufficient additional inspections with the ARDI to justify to stay simply with the volumetric inspection of the Section 11 of the ASME?

MR. WICHMAN: Yes.

DR. BONACA: Okay; why don't we proceed? Go ahead.

MR. SOLORIO: Oh; do I need that mike here?

[Pause.]

MR. SOLORIO: Another area that we were -- spent a lot of time dealing or discussing an issue with BG&E was in the reactor vessel head closure seal leakage detection line. Initially, more probably because of not having a complete understanding of the system configuration, we were looking at asking the applicant to propose an aging management program, but we determined that if they took credit for -- after further discussion, we determined if they took credit for their existing walkdowns to the extent possible and that that would probably be an appropriate way to manage this aging of this line, because that's how they had found a problem in the past and also the -- as a result of the past action, they started blowing down the line to keep the contaminants out of there that were leading to a corrosive environment, and there was also an orifice to limit flow should the line break for a reason that, you know, we couldn't foresee. We figured that that was an

appropriate way to manage that line, so we closed out that item.

And the next slide is what I meant earlier when I talked about how -- if I try to go through all of these, I could probably not get much further than a couple more slides today, so since I have the people from the branch also here, these were all EMCB-related items, and if there were any particular ones that you were interested in, you could let us try to answer some questions on these.

DR. BONACA: We've all reviewed the package, and does any member have questions?

SPEAKER: Calvert Cliffs was going to replace their steam generator. When is that going to happen?

MS. COFFIN: 2001, 2003. Stephanie Coffin, NRR; 2001 and 2003, I think. Soon.

DR. SHACK: Then, all their egg crates will be stainless steel by that time, right?

MS. COFFIN: That is right.

DR. BONACA: Okay; it was a point. It wasn't clear in the -- okay.

DR. POWERS: I guess I was fascinated by the forecasted corrosion and especially the boric acid up so high if you go to extended -- the fuel production, is that considered when you think about the aging of these plants?

MR. SOLORIO: I'm going to need you to ask that question again: standard burnup of the boron control rods?

DR. POWERS: The amount of boric acid you need to have for reactivity control for high burnup fuel was high. It's how much boric acid you can get in.

DR. SIEBER: Well, when you use very high burnup fuels, don't you put in burnable poisons that are not boric acid?

DR. POWERS: We're taking the boric acid right up there, and they take these so much; you get absorption in the upper part of the fuel pushing in the stem. Interesting things happen.

SPEAKER: Now, how many tons of boric acid crystals are you going to deposit once you have the leak come in?

DR. SHACK: You evaporate everything anyway once you have the leak, and so, I mean, it's a highly concentrated boric acid now no matter what you're putting in the reactor coolant system. It's really the concentration you get to by leaking it out and boiling it off. And you get to the same concentration in either case.

MS. COFFIN: It might just happen a little sooner.

DR. SHACK: Yes.

MS. COFFIN: I mean, you're still doing the walkdowns every refueling outage, so, I mean, the time at which you're starting to corrode your carbon surfaces might still happen, you know, a minute -- it's not very easy to quantify.

DR. POWERS: It's your boric acid paste that's the corroding agent.

DR. SHACK: Well, it might affect how many pounds of boric acid you see on the walkdown. It might make it easier.

MS. COFFIN: It might help.

[Laughter.]

MR. DAVIS: Jim Davis. Westinghouse did an analysis on that for the vessel head penetrations, and they found that you could have a gallon a minute for 8 years and still not go past your design margins on the head, and we concluded that they would find 450,000 pounds of boric acid crystals.

[Laughter.]

DR. POWERS: It depends on whether they did it by entering the fracture.

[Laughter.]

DR. SEALE: We might have a waste disposal problem then.

MR. GRIMES: We just don't want to leave the impression -- we are not encouraging high burnup fuels so aging effects will accelerate. It's not our intent.

DR. POWERS: I was asking the other question around. In thinking about pure aging inspections, did the evolution toward higher burnup fuels have some impact on your thinking?

MR. GRIMES: I don't really think so. I don't recall the concerns. Is there anyone on the staff who knows whether or not high burnup fuel ever came up in the course of a discussion about the aging management programs?

[No response.]

MR. GRIMES: I don't recall that it ever came up during our deliberations.

DR. POWERS: At plant levels, there have been some interesting things happen with the reactor internals because of a high burnup fuel: control rod sticking as well as this flux shifting, things like that.

[Pause.]

MR. GRIMES: I'll go back and consult on what kinds of considerations high burnup fuel might have on the evaluation criteria first.

DR. POWERS: You might just ask Margaret Chatterly. She has her finger on that pulse very closely, and she could certainly go through the things that they've thought about, and I guess the areas that you're going to be interested in, they're going to do anything in the management of the high burnup fuel that would change fluences on the vessel, I presume that the control rod drive mechanisms, things like that, don't fall under your scope of work.

MR. GRIMES: Not to the extent that the concerns about things like fuel boiling and sticking at control rods, those sorts of things are expected to be manifest in other programs, not in aging management.

DR. POWERS: Presumably, they would manifest themselves during normal operations.

MR. GRIMES: That is correct.

DR. POWERS: And then just the normal testing. So you're most interested on is the fuel management scheme going to change any of the fluences to the vessels, especially in those plants where you don't have a lot of material that you can use for monitoring.

MR. ELLIOT: We do that. If they change the fuel management in the fuel, they change their fluence, they evaluate the fluence, give

it to us, and we review it. That is a continuous process if the fuel management changes. If they go to a higher rated, you know, power ratings, they have to come in here and tell us what the impact is of the higher power ratings on the neutron fluence are received by the vessel and the impact on the vessel. We do this all the time, and we did it in this case in the sense that they project at the end of 60 years what fuel management they're going to have, and from that fuel management, they determine the neutron fluence.

If they change that fuel management on the next 30 or 40 years, whatever that is, then, they would be required to tell us how that impacted their previous analysis. It's all built into the process.

MR. GRIMES: But to the extent that you've raised the question in terms of whether or not there are some subtle implications for aging management programs beyond the ones that we obviously addressed in terms of the vessel materials and internals properties and those things, we'll go back and look at that.

DR. SEALE: It's clear to them that any changes like that will be assessed, and clearly, they must have evaluated what they would expect any change or how any changes they might make down the road with respect to operational schemes, extended burnup fuels and so forth, how they would influence the credibility of the license renewal process that they've already gone through. It's kind of like playing in the middle of the freeway if you haven't done that.

DR. POWERS: Well, it's also true that unless the plants actually experience some of these things through fairly subtle events.

DR. SEALE: Yes.

DR. POWERS: And anticipating them might not really be possible.

DR. SEALE: Yes, but clearly, you know, if you're going to change your fuel burnup scheme, you probably have thought about what that means. Yes.

DR. BONACA: Okay; let's move on to the other confirmatory items.

MR. SOLORIO: Yes; these are confirmatory items, and for the most part, you know, we understand -- when we wrote these down, it was pretty clear to both sides that what we knew what to do, it was a matter of just getting a commitment from BG&E to agree to basically that most of these are just incorporating additional components into existing programs, the first one, modify BACI to inspect a particular part of the reactor vessel's cooling shroud to look for water pockets; using an enhanced VT-1 in some cases for reactor vessel surveillance program; including some more CDM components in the scope of BACI, et cetera.

So, once again, if you have any specific questions, but --

DR. BONACA: Let's go to the next overhead you have, and the data you're talking about, GSI 190.

MR. SOLORIO: Yes.

Okay; well, in that case, we're done with the EMCB portion, so I need at least two chairs cleared so I can bring up the --

DR. SHACK: Swelling wasn't an issue here?

MR. SOLORIO: Well, it wasn't an open item, but we did --

MR. DAVIS: Well, actually, swelling came out after the

draft SER was issued, so it was sort of handled outside of the open item issue list.

MR. SOLORIO: But it is in the safety evaluation report. You will find it.

DR. BONACA: Will you discuss it at some point later?

MR. SOLORIO: We can discuss it now, because these guys are it so -- yes, you're right; let's just be clear: there was never an open item or confirmatory item on swelling, like Mr. Hiser said here, it came up during the review, trying to finalize this SER.

DR. BONACA: But I see in the agenda here under item five in the agenda, there is a discussion of the way the steel was treated to cover at least --

MR. SOLORIO: Oh, you're right so -- that's different.

DR. BONACA: Oh, yes, I'm sorry.

MR. SOLORIO: But I was going to say we could have talked about it then, too.

DR. BONACA: Okay.

MR. SOLORIO: They're going to be back for that part so now or then. All right.

DR. BONACA: We'll pick it up then.

MR. SOLORIO: All right.

DR. SHACK: That is -- let me just talk about Calvert Cliffs and high burnup fuel and all of that. What is the projected end of life fluence for these internal, considering that people are going to high burnup fuels, and they've gone to low leakage cores? Maybe -- I don't know if the staff or the Calvert Cliffs people can just tell me, you know, what are the end of life fluencies we're talking about for internals?

MR. SOLORIO: Well, Mr. Hiser is going to try to answer that.

MR. HISER: One number that sticks in my mind for B&W plants from an internals topical report is on the order of 1022 for baffle bolt region, and I don't know if that's on the high end of the spectrum or if that's on the low end.

DR. POWERS: I think just about everything is 2 x 1022.

DR. SHACK: Right; it's just a question of how many times --

DR. POWERS: A few times; what a few is that's --

DR. SHACK: I believe the 1022. The question is --

MR. WHITEHEAD: If I remember, and again, I don't remember the conversion to DPA, but the DPAs were on the order of 60 to 100 so that's -- I'm not sure what the conversion is.

DR. SHACK: That would come to quite a few times 1022.

MR. WHITEHEAD: That might be about 7 x 1022, something like that.

DR. SHACK: Okay; so, even with low leakage cores, people are still talking about DPAs of that order. I thought to protect the vessel, and I just never knew when these DPAs were calculated on what basis.

MR. WHITEHEAD: Just to reinforce, that was a number out of a B&W topical, which I assume is somewhat of a bounding value for B&W plants. I don't know about the other vendors or any impact of fuel

managements.

MR. GRIMES: Dr. Shack, would you like us to research that further and get the numbers?

DR. SHACK: Yes; I'd be interested in knowing what those numbers are.

MR. GRIMES: Okay; the end of life fluence and whether or not that reflects a low leakage practice.

DR. SHACK: Yes; I just -- what an updated version of that would be, and I've heard the numbers 60 to 100 quoted before, but I was never quite sure whether that really took into account what I think they're really doing in terms of modern fuel management.

DR. BONACA: All right; DPA.

MR. GRIMES: We'll get that information back to Mr. Dudley.

DR. BONACA: Move on.

MR. SOLORIO: All right; in the mechanical engineering branch area, the top issue, obviously, would be fatigue in GSI-190. Baltimore Gas and Electric chose a plant specific solution for the most part here. This was -- represents a lot of effort between the staff and Baltimore Gas and Electric trying to reach an understanding. As you see, I've outlined you on the slide the general approach. If you have any specific questions, please --

DR. BONACA: Well, I have a question. There is a resolution, a proposed resolution on GSI-190 that essentially is based on two findings. One is that the frequency of initiators, crack initiators, is significantly increased between 40 years and 60 years of life. However, the core damage frequency associated with these kind of cracks, and mostly, it is because cracks will occur in smaller piping, and in certain locations, you will have looked before breaks and things of that kind, okay?

So that's really -- there is a recommendation that is coming to us that says that we should close GSI-190 on the basis of the fact that CDF is not changed between 40 years and 60 years; however, certain provisions are to be made insofar as inspections to deal with the higher frequency of cracks that we will experience at 60 years rather than 40.

Now, the question I have is also, in that evaluation, by the way, they say that the criteria used by the ASME standards is not conservative for 60 years. So the question I have specifically is what is specific to the Calvert Cliffs fatigue engineering program that would allow us to account for these new findings that we have?

MR. FAIR: I'm John Fair with NRR. The -- I'm aware of what you're talking about here. Research is getting ready to or has, I guess, submitted the package on the resolution that GSI-190. The findings were that you're going to get a fairly high frequency, predicted frequency, of crack initiation. The study was based on the existing study that we had done several years ago by Idaho National Laboratory, which we took a sample of components, put in the environmental effects, calculated some usage factors and tried to determine whether we could get those fatigue usage factors less than one.

In most of the cases, we were for 40 years, but there were some cases the usage factors were still greater than one in 40 years and

quite a number that were greater than one in 60 years. So the high incidence of leakage cracks out of that study are based on CUFs that exceed one with environmental factors taken into account. The program here -- there are two options: one is to adopt the GSI resolution that's coming over to you in the package, and the other one is in case that wasn't available, they had a plant specific monitoring program that they proposed.

The plant specific monitoring program takes the existing fatigue monitoring program at the critical locations and uses the environmental factors from the Argonne studies and computes the CUF. The intent of that is to keep the CUF from exceeding one and hopefully keep from getting the high incidence of crack initiations.

DR. BONACA: Okay; so the multiplier from the Argonne study is being utilized.

MR. FAIR: Right; and there were a list of the specific components which they're going to use this multiplier on.

DR. BONACA: Okay.

DR. SEALE: That all presumes the idea of leak before break as being the expression of any failure due to a crack; that is, and all of this is based on the idea that you'll get a leak which will give you an inspection product which tells you you've got a problem before you get a major break.

MR. FAIR: I think if you get the full study that research is going to send over on the GSI resolution, they have -- they predict the incidence of fatigue crack initiation and then through wall fatigue cracks, and based on some additional studies, they have determined once you get a through wall fatigue crack, there's some proportion of them that could be large breaks or large leaks. So there's a statistical evaluation of that. It just doesn't assume it.

MR. GRIMES: Let me make sure I understand Dr. Seale's point, because I believe that the answer is no. If we were to take full advantage of our leak before break concept and simply say, well, we don't care whether the CUF is greater than one or not, we're simply going to let it leak and fix it, would be to discount this plant specific solution and to, you know, simply let it go. Break it and fix it.

But this approach and the approach that we've described for GSI-190 is that there's a policy issue to decide whether or not you're going to rely on that as the aging management program or whether, as John described, you're going to rely on a process of monitoring the critical locations that are approaching high utilization factors; you will account for the environmental effect in determining when to take action to fix it before it leaks.

DR. SHACK: Yes; in this case, I mean, you're really fixing it even before there's a very large probability that it's going to crack.

MR. GRIMES: Correct.

DR. BONACA: It has to be very, very clear, because it wasn't -- I mean, since GSI-190, the proposal that came after this came wasn't clear to me how it was incorporated. So what you're saying is that, if I understand the program from Calvert Cliffs, they are going to

really count the number of cycles literally on limiting the components, okay, and they're applying the Argonne criterion, so therefore, once they get to that point, they will be taking some curative action, and therefore, the likelihood of having a larger number of licks is not going to be increased.

MR. GRIMES: That is correct.

DR. SHACK: But they could adopt GSI-190.

MR. GRIMES: Yes; in the event that the commission -- that when we present the resolution of GSI-190, if the commission wants to rely on the low impact on CDF and say, well, we're going to be risk-informed; we're not going to require this accounting for the environmental factor in order to make a judgment about the effectiveness of aging management, then, if the answer came out that way, and so, you don't need to do any reanalyzing; you don't need to do any monitoring like this, then, we would suspect that BG&E would come back and say no, we're not going to use the Argonne data.

DR. BONACA: But that is not what the resolution says. I mean, I read it, and it says we don't recommend that we keep the GSI-190 open, but we recommend that programs be instituted to control the effects, to control the rate.

MR. GRIMES: Yesterday, there was a meeting with industry to talk about the report. The report is going to be released to the industry within the next few days, and we are prepared to come in and explain the policy issue associated with generic safety issue 190 to the committee on December 3, I believe it is, at 8:30.

DR. SEALE: I understand my copy of that has to be over there when I came into this meeting, so I haven't seen it yet.

DR. BONACA: I got it yesterday, and I looked at it, and it was interesting that it clearly says, yes, core damage frequency justifies closing GSI-190. However --

MR. GRIMES: However.

DR. BONACA: Okay; and the however really is pretty much what is being instituted at Calvert Cliffs.

DR. SEALE: Well, the real question in my mind is whether fatigue-induced cracks obey the same failure distribution as ordinary or, rather, cracks.

MR. FAIR: We had a lot of discussion on that particular item, and that was the cause of some reevaluation that went on before this report got finalized.

DR. SEALE: Well, I'm sure we'll get into that on GSI-190. But we won't worry about it here.

DR. POWERS: I wonder if I could ask a question about the history on the environmental factors. It says here that the environmental factors will be based on correlations developed at a -- some sort out in the Midwest.

MR. GRIMES: Which shall remain nameless.

DR. POWERS: Is it the case that the applicants came in and said that they had these environmental factors from some other organization, and NRC staff said no, you have to use ours, or did they know any environmental factor that was available?

MR. FAIR: We did have some discussions back and forth on

what to use as far as those factors. The data is the same. Argonne has gotten worldwide data together to come up with their correlations. There are some interpretation differences between the staff and the industry on how much credit in the existing fatigue curves can we take for environmentals? That is, how much can we reduce that factor based on what already exists in the ASME curves? And we reached some compromise agreement in this resolution here where we did give some credit to BG&E for existing conservatism in the ASME curves as far as that factor.

MR. GRIMES: But to be clear, John worked with BG&E in order to make sure that we had accounted for the uncertainty and the controversy over what the appropriate factor is for a decision criteria that we're prepared to defend as being effective at taking action so that we don't have to rely on leakage as the indicator that fatigue damage is occurring. And so, the ultimate generic resolution, the GSI-190 aspects, are going to address these questions about the difference in interpretation of the data and what all the data means and that sort of thing, but in the meantime, the staff has accepted this plant-specific approach as being adequate even in the face of that controversy; is that correct, John, the way I said that?

MR. FAIR: Yes, you did say it correctly.

DR. BONACA: Okay; all right. I have a question for the presenter, Mr. Solorio. How long do you have still to go for your presentation?

MR. SOLORIO: Three or four slides.

DR. BONACA: But there may be other questions, so should we take a break now or just go through it?

MR. SOLORIO: I was going to say it's okay with probably us if we continue to go on so that these guys can get out of here.

DR. POWERS: Why don't I suggest that we charge right ahead?

DR. BONACA: Okay; so, let's complete this, and then, so, this will cover section three of their presentation. Let's go.

MR. SOLORIO: The other area that we had additional -- some extensive interactions with Baltimore Gas and Electric on was the management of containment prestressing force with respect to the tendence. We were trying to work out the most appropriate aging management program here, and through the additional interactions, we learned that the existing -- I guess some of the changes in the existing regulations that BG&E is going to have to start following that do go a long ways towards making -- having an aging management program.

We asked for some additional details regarding how they are going to do these inspections, and under this 50.55(a), they provided a response back to us on what they were going to do. We looked at the other response in terms of how did it pair up with our SRP elements as we've done in almost every other case; we just haven't mentioned up to this point, but you'll see that in the text, we usually address the elements that are appropriate, and we felt that their aging management program would be sufficient for this, and we're going to close it.

[Pause.]

MR. SOLORIO: Do you need to clarify anything that I might have said wrong, Hans?

MR. ASHER: No.

MR. SOLORIO: With respect to the materials branch, also, there were some additional open items: fatigue; there were a lot of cases where we were asking them just to include certain or to evaluate certain components in other systems to determine if there was any critical components in those systems that needed to be added to their fatigue monitoring program, and they made that commitment, so therefore, we were able to close some of those open items out.

And then, we had some questions about the intake structure and its potential exposure to ground water that might have been corrosive or what was the potential to the exposure to corrosive ground water, and we closed that out, too.

DR. SHACK: John, did you do the fatigue analysis by the old method? That seemed to me a rather legalistic argument, I mean, the way it was settled. Was there really a discussion about the number of stress cycles there that was really pretty conservative, even for 60 years?

MR. FAIR: You're talking about the class two and three piping on Calvert. I believe in the design code for class two and three piping, all they do is look at thermal expansion bending stresses, and there's a criterion in there that you reduce that allowable if you exceed a certain number of cycles, which is 7,000 cycles. They said they went back and took a look that they didn't exceed that 7,000 cycles, and I believe that because that would, like, be a full range heatup and cooldown type of situation.

And there was also another criterion they used, and that criterion, if they had a very small delta-T change in the system, which would not give you significant stress. So I didn't have any problem with that. The only argument between us was whether that was a TLAA, or it wasn't a TLAA, and we felt because it had a 7,000 cycle limit in the code, it constituted a TLAA if you went and checked to make sure you didn't exceed that.

DR. SHACK: Okay; so, there was no technical disagreement.

MR. FAIR: No.

DR. SHACK: Just legalistic.

MR. FAIR: Just the legalistic.

MR. SOLORIO: These are confirmatory items. Once again, there were some other cases where we asked them to look at some other systems and determine whether or not they were critical components that needed to be added to the fatigue monitoring program in the CVCS. They're not doing an RE. That's clear now. That was closed out. We just had questions about how effective it was going to be if at all, and other things are just adding additional checks to existing programs of components that we thought they should be looking at.

And the last slide I have is for EEIB, the electrical engineering branch had an open item related to some penetration components that weren't within the scope of an aging management review. The applicant explained to us how they could credit some existing programs for managing these, and we were able to close out the item. And that's it. The last slide is just a schedule to kind of show where we are in our Calvert Cliffs review cycle in case anyone wanted to look

ahead.
DR. BONACA: Could you put it up?
MR. SOLORIO: Sure.
[Pause.]
DR. POWERS: On a previous slide, you talked about leakage, the one that is going to be used -- do you have any grazing or polymers or plastics?
MR. SOLORIO: I don't understand your question.
DR. POWERS: And that's what's happened.
MR. SOLORIO: Let me ask them to explain the details here. Paul Shemanski?
MR. SHEMANSKI: I believe the answer is yes. Basically, the concern is what effect would radiation and temperature have on the epoxy O-rings, you know, the nonmetallic portions of the electrical penetration assembly that could degrade, theoretically, from exposure to radiation and temperature. So this is where BG&E credited one of their existing programs, the integrated lucrate test program, to see if they get significant leakage, then, they'll look to see whether or not the penetration internals are, you know, degrading from radiation or temperature. The initial look they took was only at the outside, the metal itself. They made an evaluation for corrosion.
DR. POWERS: What kind of fluences are they -- the epoxy O-rings susceptible to in penetrations?
MR. SHEMANSKI: I don't know.
DR. KRESS: The integrated leak testing is running what?
MR. SHEMANSKI: This is part of the tech spec, integrated leak test program.
MR. GRIMES: I don't know if there are any plants left that do have pressure tests. It's typically performed at peak calculated, Pa in appendix J. They were talking about eliminating the half-pressure test at 0.5 Pa, but I lost track of that one, so I don't know if that's still a provision or not.
And then, the answer to your previous question is we could go and try to get a figure for what the fluence is at the containment wall, but it's pretty low.
DR. POWERS: It's probably not worth your time, because I don't think it's very high, and so, you don't have any of these synergistic effects that fool you, I suspect.
MR. GRIMES: We wouldn't expect so.
DR. KRESS: The nature of my question was is the loop test a sufficient test to see if you've degraded that stuff? I don't know if it is or not.
DR. SEALE: But if you have an electrical failure in one of these penetrations, that doesn't fall under the aging program. That's something that you would respond to in the context of an electrical failure in the normal operation of the penetration, isn't it?
MR. SHEMANSKI: That is correct; if you had a false current or something in your respond, you know, it's going to show up either a blown fuse or a tripped breaker or something like that. So you will have a direct indication of an electrical type faulted condition.
DR. POWERS: I guess, you know --

DR. KRESS: Is this in this space again?

DR. POWERS: It's going to DBA space. Are all the aging processes in polymers going to lead to shrinkage, or do any of them lead to swelling?

DR. KRESS: And will these penetrations survive DBAs and similar accidents is the bottom line.

DR. POWERS: Yes.

MR. GRIMES: In short, let me try and summarize. We look at the aging management programs in order to ensure their intended function. In this case, there are two functions that we have a concern about. One is electrical continuity, which we think is constantly challenged by virtue of energizing circuits, and the other is the integrity as a leakage boundary, their containment leakage boundary, in addition to environmental qualification tests that try and -- that try to simulate the synergistic effects of the combination of all of these things over time.

We also have Appendix J, which includes a provision for a visual inspection, and we're looking to Appendix J, the leak test pressurizing the thing; the visual inspection will give us some indication about whether or not we're experiencing something that needs to be corrected, and that's basically what our conclusion is.

Paul, do you want to add anything to that?

MR. SHEMANSKI: No, I think that's a pretty good summary.

DR. POWERS: What you are saying is basically, you've got a performance criterion here, and so, you really don't care -- the polymer itself can be dancing cartwheels for all you care as long as the two performance criteria are met.

MR. GRIMES: That is correct, but I pointed out also that there is a visual inspection associated with containment leak testing, so even though you don't blow it out, if, you know, if it doesn't look right, or if you're experiencing some, you know, some bizarre bulging or something like that, there are those aspects that Appendix J also affords us that are important to aging effects as well, not just the leak test.

DR. POWERS: Essentially, on the frequency of leak testing called for by the --

MR. GRIMES: They came risk informed, and so, it's hard for me to describe it these days. It used to be three times in 10 years, but now, if you do real well, you can put -- string it out.

DR. KRESS: Yes; essentially, anybody can do that leak test now every 120 months or something like that.

MR. GRIMES: Option B.

DR. SEALE: Are you going to put the schedule up there?

DR. BONACA: Why don't you put your schedule up there so we can look at it?

MR. SOLORIO: Oh, just to kind of highlight where we are right now and what we've done so far and where we have to go is the remainder there.

DR. BONACA: When did you put together that schedule?

DR. KRESS: Was this before or after?

DR. SEALE: What's that going to do for you?

MR. GRIMES: Nothing.

DR. SEALE: Nothing?

MR. GRIMES: This is our schedule. We're working to this schedule. On November 12, the district court made a ruling that is now going to cause the commission to decide whether or not they need to do something. In the meantime, this is my schedule, and I will continue to work towards preparing a commission paper with a staff recommendation. Then I, too, will toss the ball into the commission's court, and they will have to decide what to do with those two conflicting recommendations, but at this point, we're continuing to work towards this schedule.

By the way, I believe our end game schedule was established in August or September, and it represents the stage to get to completion, but right now, the commission -- we are working towards the January 14 date, which is going to pull together the safety evaluation, the final environmental impact statement, a recommendation from the region in terms of the results of their inspections, the last of which will be completed December 3 or 4; I can't remember what that date, but it's December 4 on this schedule, but they're starting, I think, on November 29.

DR. APOSTOLAKIS: Does the public have any opportunity to intervene here anywhere to express comments independently of the decision of the court?

MR. SOLORIO: The public meetings, they're always asked --

DR. APOSTOLAKIS: Which ones?

MR. GRIMES: Your meeting is an opportunity because as noticed, it solicits an opportunity for public comment. The commission meeting would similarly be noticed.

DR. APOSTOLAKIS: If, for example, the public wanted to come today to comment on the SER. If I look at that schedule, I would have to agree with the court: 11/16, 11/18, and do they have enough time to review it?

MR. GRIMES: They also have an opportunity to comment at a commission meeting if requested.

MR. SOLORIO: I would add that they've had also the SER in its present form since March, what really we're only talking about now is the open item resolution.

DR. APOSTOLAKIS: Did you every get any comments on the SER?

MR. SOLORIO: No, I did not.

DR. APOSTOLAKIS: Since March, nobody has tried to give you any --

MR. SOLORIO: And my name is up in the front of the document, so they can find me.

MR. GRIMES: To be clear, we did not specifically go out and solicit public comments on the safety evaluation, but when we went out and did our activities and held public meetings, we described this part of the process. We described the preparation of the safety evaluation. We pointed out that the safety evaluation addresses plant aging effects; the environmental review does not. So even though we didn't specifically say tell us what you think about the SER, it's been there, as David says, since March, and they could have commented on it.

DR. APOSTOLAKIS: It's been there where?

MR. GRIMES: In the public domain.

MR. SOLORIO: And on our NRC Website since the end of May.

DR. APOSTOLAKIS: I'm perplexed now. You are the originator of this.

MR. SOLORIO: But I didn't think the court was talking about the process.

DR. APOSTOLAKIS: The decision said that they didn't have enough time to actually go to the plant with their own experts.

DR. SEALE: They said they changed the interpretation of that phrase.

DR. APOSTOLAKIS: I don't think the Washington Post, if they wanted their own experts to inspect the plant, not the SER, okay?

MS. MOORE: That court decision was limited to a ruling on what standard the commission used in denying a request for an extension of time to file contentions, and it concerned the filing of the application. The court's decision wasn't -- didn't involve the SER at all. It said that we change the standard from good cause for granting extensions of time to unavoidable and extreme circumstances without providing an opportunity for notice and comment, as though we had changed the rule. That was the court's ruling, and they weren't considering the SER at all.

Remember that that motion was filed in 1998. It was when the application was filed in April, and the motion for extension of time was filed in August of 1998. So it's related to how much time the intervenors had -- the petitioners, pardon me -- had from the time the application was received until the time that their contentions would have been due, which I believe was in September of 1998.

DR. APOSTOLAKIS: So the questioned that time interval. It was too short. Is that what they're saying? I'm sorry; I don't follow the legal --

MS. MOORE: I understand that, but the real crux of the court decision was the court's view that we change the way we granted or the reasons for which we granted motions for extension of time, and we didn't do it by a rulemaking. That was the basis for the court's decision, and they were concerned -- they remanded that the decision on whether the motion should have been granted back to the commission and said using your own standard, you should determine whether the motion would have been granted in the first instance.

The court made some pronouncements about what it thought, but it did say that it was up to the commission to go back and determine.

MR. GRIMES: Let me also add, because I've been trying to work both aspects of this, in the particular case that went to the court, the petitioners' view is that meaningful public participation is to litigate issues, and they were looking for more time to define contentions that would be litigated before a licensing board. That's separate from and distinct from our attempts to go out and inform the public about the basis for a renewal decision; to discuss the contents of the SER.

Those things don't count in terms of meaningful public

participation in terms of the petitioners who actually want to get these issues before a licensing board and litigate them. Now, the rules in part two that we've used for -- in the original licensing established that we weren't going to wait until the end of the process to litigate them. We've always had a process that said that the petitioners have to tell us that they want to intervene and that they want to have hearings when we start the review process, not when we're done with it.

And this particular case involves a question about whether or not the standard for the parallel schedule that we originally set up for adjudication, whether or not that offered them a fair amount of time in order to identify contentions of the issues that would be litigated.

DR. APOSTOLAKIS: So what are the options open to the commission now?

MS. MOORE: The commission -- the commission has to determine how they want to proceed from here and whether they're going to request information on whether the original motion should be granted or whether they're going to do it themselves, and they may have other options. I'm not privy to them at this point.

DR. BONACA: Thank you very much.

MR. GRIMES: Needless to say, as I've said before, I'm going to make it clear that while the commission is deciding what their options are and what they're going to do, we're going to continue to move forward on this schedule towards the preparation of a commission paper in January.

DR. BONACA: Sure.

MR. GRIMES: We would expect that by that time, the commission would have decided, and we will know what they're doing, and we will act accordingly.

DR. BONACA: Okay; very good.

With that, I think we'll take a break now until 10 of 3:00.

[Recess.]

DR. BONACA: We will resume the meeting, and I guess --

[Pause.]

DR. BONACA: Okay; we are resuming the meeting, and I think we are talking about status of standardization. Somebody passed out?

DR. POWERS: What is this now? The title is --

MR. SOLORIO: GALL.

DR. POWERS: It should be divided into three parts, I'm sure, at least.

MR. SOLORIO: GALL is divided into three parts. It starts with the schedule. It includes an invitation letter that I sent out to a list of folks who are at the back of the package and an agenda for the workshop that we are going to hold on December 6 to solicit stakeholder feedback on how to proceed with the generic aging lessons learned, which we otherwise call GALL, and we expect from that to develop the standard review plan improvements, and I'll just -- I'll point out that the overall schedule that we're working towards starts with a meeting that we had with NEI in October to basically outline our -- the outcome that we wanted to achieve, which is basically as much agreement as we could get in terms of how to credit existing programs and proceed with the development of a generic aging lessons learned report.

Earlier this week, we participated in an NEI-sponsored workshop on license renewal, and we talked some more about credit for existing programs and how to focus on where programs need to be augmented to manage aging effects. We're going to hold our own workshop here in Two White Flint on December 6. UCS has agreed to be a participant in that effort, and we sent out a very wide distribution of invitations. And then, following our workshop, we will take that feedback that we get from our stakeholders, and then, we'll work with NEI to develop the completion of the GALL report and to implement the new standard format and a revision to the standard review plan.

We expect to bring that package to the ACRS in February of 2001, but we will keep you informed in the meantime of our progress as we proceed toward that milestone with an expectation that we would submit GALL and a standard review plan to the commission for their approval in March of 2001.

DR. POWERS: I have a document called the GALL report. That's just the current iteration of this or --

MR. GRIMES: We've been releasing parts of the report as we've finished it. I believe we issued the turbine or the steam and power conversion section, which was the least controversial of the areas. Today, we issued the electrical chapter. As the contractors help us finish these chapters, then, we're going to put them out in the public domain in order to get as early stakeholder involvement as we can.

DR. BONACA: I have a question of the license renewal standard review plan, which is, you know, I reviewed recently the September 1997 SRP that is in place, and I find it to be informative, but really, there are no criteria of any type. Everything is, you know, postponed, and it seems to me that if the number of applicants for license renewal is as large as we think it is going to be, they are going to be working at it now next year, and I really would have liked to see an interim update of the license renewal SRP ahead of time, even if it was a rough update, but something that would give some guidance on a preferred format on the part of the staff and content, my concern being that we may see proliferation or some other approaches or, you know, one of a kind solutions that may not be desirable, but they're justified.

MR. GRIMES: We anticipated that problem as well, and that's why we concentrated on getting NRC and industry agreement on a standard format and content. It basically outlines the way we want the information presented for our review. The industry has agreed both generically, and also, the next two applicants, Arkansas and Hatch, have used that standard format along with the experience that -- the experience from Calvert Cliffs and Oconee.

And I would like to say that even though we recognize the 1997 version of the standard review plan was somewhat coarse, we were still very pleased that the staff managed to use that and conduct the reviews of the first two applications as effectively as they did, and we also will have the benefit of, as we get the GALL report out, and the applicants can see how we've used the 10 program elements on a program by program basis that there will be more guidance available for them.

This schedule shows that we expect to be able to have a revised standard review plan in August of 2000 which we would send out for public comments to more directly engage our stakeholders, and given keeping up with the applications and resolving generic renewal issues and other things, that's about as ambitious as I think we can get.

DR. BONACA: So that would be your first product; I mean, that would go out for comment, so that would be the middle of next year. I think that's reasonable.

DR. POWERS: I think you have to congratulate them for their --

DR. BONACA: Yes.

DR. POWERS: -- the breadth of the things that they've sent out to offer this workshop to, and they are presumably reaching out to them. But it still does not include the exposure before the learned societies.

MR. GRIMES: Actually, when we sent our invitations out, I did send invitations to the professional societies, the ASME and IEEE, ANS. I sent it to Mr. Kadak or Dr. Kadak. We did try and reach out to -- I confess about the only thing that I didn't do was try to involve academicians, go to universities and those bodies, but I did feel like we reached out far enough to get the professional groups, and we posted the information on the Website, and as we find others who are interested in aging management, then, we will include them as well.

DR. POWERS: But there are learned societies that are completely devoted to the issues of corrosion. There are journals with the name corrosion included, and I don't see you making contact with that community the way that community wants to be made contact with, which is not sending somebody, their president; it's participating in their meetings and giving voice to the things that you're trying to accomplish here. And when does that happen?

MR. GRIMES: I don't know, but I'll figure it out. I'll take -- I think that's an excellent comment, and we'll go back, and we'll consider how we can reach out to those organizations as well.

DR. POWERS: Because certainly, the groups that you looked at here for your workshop, it is a cross-section, and I do wish Graham Wallis were attending this meeting, because I think he would be delighted when he saw the cross-section that you had been able to touch.

MR. GRIMES: Thank you; but to the extent that we can try and find other contacts and notify them at least about the workshop in December, but then, between December when we hold that initial workshop and then when we go out for public comment, if we can engage other stakeholders that would have a particular interest, the corrosion society --

DR. POWERS: It just seems to me that it would be terrific if you could approach the -- one of the journals devoted to corrosion and aging.

MR. GRIMES: This is really -- I mean, if you've got NACE, then, I mean, certainly, they should be -- the National Association of Corrosion Engineers.

DR. APOSTOLAKIS: Well, the question that comes to my mind when I hear you say these things is why would these people come? I

mean, you don't go to meetings just to go to a meeting, right? So I don't know that going out of your way to invite these societies would be helpful.

DR. POWERS: Obviously, I think I agree with you. Getting this thing sent to -- I know the societies I deal with; if the president got this thing, he wouldn't know what to do with it, and he wouldn't do anything with it.

DR. APOSTOLAKIS: Right.

DR. POWERS: But on the other hand, if you had one of your staff giving the presentation at the NACE meeting or something like that, it exposes a cross-section of people that probably don't come in contact with it.

DR. APOSTOLAKIS: That's different, yes, that's different.

DR. POWERS: And they might be quite stimulated by just the recognition that people had problems, and it might be very interesting to do

DR. SEALE: Well, some of these societies have Washington offices, too, and they may choose to have a staff member who resides here anyway come to it. If we could see if there's anything relevant to their --

DR. APOSTOLAKIS: I mean, relevant to what? I mean, do they see any research support coming, or do they see any way of influencing things? No; so their interest will evaporate very quickly.

DR. SEALE: No.

DR. SHACK: Well, I mean, NACE, for example, does sponsor environmental degradation and nuclear power plant symposia every other year. You know, they have a professional interest.

DR. APOSTOLAKIS: So maybe that would be a good place to have a special session or something.

MR. GRIMES: We have managed to stimulate some interest more broadly by our participation in things like the international conference on nuclear engineering, the American power conference, the ASME power conference, things like that, and to the extent that we can make clear to these special interest groups that there are aspects about aging management for which GALL is attempting to identify the effectiveness of current programs and identify where programs need to be augmented, there is an aspect of that that does involve research needs for the future, and that has come up in our relationship with the Office of Research in terms of how they are coordinating with -- DOE has a NEPO program that looks at, you know, where there could be more research to assist in plant life cycle management.

DR. POWERS: Because I've been generally persuaded by the argument that by having credibility, an NRC program with a learned society contributes immeasurably to public confidence in that program, and I think you've got a good -- you've got an awfully nice job here in a lot of these things, and getting exposure to the professional societies and some sort of endorsement or at least credibility from them I think is merited here.

MR. GRIMES: We will keep working towards that goal. We are very interested in trying to establish public confidence in the work that's being done here.

DR. APOSTOLAKIS: I think that the real measure of acceptance is to actually write a paper and send it to their major journal. That's when people get out their knives and give you problems. To go and present a paper doesn't really do much. To publish a paper in Nuclear Energy and Design doesn't do much. But if you send it to that journal of a society that deals with corrosion, for example, and then, you will see what comments you get, then, you're well on your way to getting either the blessings or the -- because I find that when people review papers, that's when they really put down -- they pay attention. To go to a meeting really doesn't do much. I mean, you can say afterwards we presented it at this meeting. I mean, that doesn't mean much.

Now, I don't know whether you can actually write a paper that will be considered by those guys a scholarly paper to be published, but I don't know. I mean, there must be application someplace, because my experience, for example, with decision theorists, because a lot of the stuff I do touches on what they do, it's one thing to present it at the Society for Risk Analysis meeting and quite another to submit a paper to the Journal of Risk Analysis. Boy, they're brutal; they're brutal.

MR. DAVIS: I'm Jim Davis. I've been a member of NACE since 1968, and they would not accept an article on license renewal in Corrosion Magazine. It's a very theoretical magazine, and as a society, they really wouldn't do anything to endorse anything that we did. They have an annual symposium that draws about 5,000 people. They have a section; they have a technical committee on nuclear energy; they have a very well-attended seminar every other year.

DR. APOSTOLAKIS: But they don't have a forum for publishing applied papers?

MR. DAVIS: Yes, they do; it's Materials Performance, and it's more of an engineering type of journal, and I would guess that a group of us would publish something on that.

DR. APOSTOLAKIS: Something on nuclear.

MR. DAVIS: But the society in itself would advertise this meeting if it were sent to them months and months and months ahead of time, but the society itself would not attend the meeting, the members of the organizing committee. They would just let it be known that the meeting is occurring.

DR. APOSTOLAKIS: Unless you say there is a lot of research money to come.

[Laughter.]

DR. APOSTOLAKIS: Then, they will come.

MR. DAVIS: They really are not very big on the research --

DR. APOSTOLAKIS: They are human too, you know.

MR. DAVIS: They are not very big in the research area. What they really like to make their money on is sponsoring symposia, and they do a lot of symposia every year, and they make a lot of money doing it.

[Laughter.]

MR. DAVIS: And if the license renewal would like to have NACE be one of their co-sponsors, I'm sure NACE would be very interested

in that.

[Laughter.]

MR. GRIMES: I'm sorry; I'm not going to bite on that one. I do find that -- I am a volunteer reviewer for Nuclear Technology, and I agree with you. I think that we will get some excellent feedback if we could find some way to capture the GALL results in some professional journals that would basically test the theories.

DR. APOSTOLAKIS: Right.

MR. GRIMES: And I'll have to try to figure that into our resource loads and plans, because we're going to have a difficult time just keeping up with writing safety evaluations, let alone trying to find staff members or others who could sponsor papers.

DR. POWERS: I think that is an area we need to chat with the commission about.

DR. APOSTOLAKIS: Sure.

DR. POWERS: Because I -- the visibility and the credibility among technical and learned societies contributes so much to public acceptance of what's going on that some measures have to be taken to make sure that these guys have opportunities to avail themselves, and they have to do a lot of it on their own time, because the membership in these societies is done at their own cost and things like that that's --

DR. APOSTOLAKIS: Sure.

DR. POWERS: The importance of it shouldn't be diminished at all.

DR. APOSTOLAKIS: That's right; now, in the past, the commission has appointed ad hoc review committees for major studies like the reactor safety study, NUREG 1150 and other studies. Has there been an effort to have a review committee to go over the process? That committee might include people from other industries. From my experience with 1150, I'm not sure those guys contributed much, because, you know, everything was so new to them that it took a long time for the poor Sandia guys to educate them to deal with macroscopic phenomena.

But something like that with members, you know, distinguished members from non-nuclear fields, because, you see, if you do that, then, it's sort of an honor to serve on that committee. People will be willing to come. They will meet with the commissioners at some point in the future. In other words, you're stroking their ego a little bit, and that's the most powerful way to get people to do things.

So maybe a committee of distinguished people to, you know, with a task to review the whole process or maybe parts of the process and then pass judgment, that may be a way of bringing -- I mean, you can ask societies to nominate people, for example, and getting some real input.

MR. GRIMES: All I could say at this point is no, we have not brought that matter up. Certainly, you know, if the ACRS thinks that that would be a valuable way to try and establish GALL and the SRP, you could make that recommendation to the commission. In the meantime, I'll go ahead and mention this to the license renewal steering committee and see, you know, what interest they have in pursuing something like that.

DR. APOSTOLAKIS: I don't know how the ACRS feels, by the

way. This is a personal view.

DR. BONACA: And it will be treated as such.

[Laughter.]

DR. POWERS: It will be views according to --

DR. APOSTOLAKIS: All this is on record.

DR. POWERS: And as in all things, you know, no good deed goes unpunished.

[Laughter.]

DR. BONACA: So we heard about the status of standardizing the LRP, and actually, I'm encouraged by the commitment to August for an update of the standard review plan. By the way, I didn't intend to diminish the value of that plan as it is today. I recognize it was a good guide. I simply could not find any criteria whenever a judgment had to be developed on what is acceptable and what is not. It typically was, you know, referred to who will determine it on a one-to-one basis. That was the key concern I had on that.

DR. APOSTOLAKIS: The standardization refers to the existing process, right?

DR. BONACA: That's right.

DR. APOSTOLAKIS: No attempt to change the process.

MR. GRIMES: I would like to point out that if you look at the end of the schedule, I described how we get GALL and the SRC to the commission.

DR. APOSTOLAKIS: Yes.

MR. GRIMES: But notice those last milestones, the staff requirements memo on credit for existing programs; the commission directed us to go seek public comment on rulemaking, that is, fundamental changes to the concept of license renewal, and so, we also have an obligation to go back to the commission with recommendations on how the very foundation of license renewal might be improved for the future.

DR. SHACK: NEI has that on their generic issues list, too, rule changes.

MR. GRIMES: And we are pursuing rulemaking for the petition for that particular change, but the staff requirements memo basically directs us to go out and seek a wider input on potential rule changes that could go to the very heart of Part 54 and Part 51.

DR. APOSTOLAKIS: So this is the May 1 item? The public meeting to discuss need for rulemaking? Is that what you're referring to?

DR. BONACA: Staff recommendation memo.

MR. GRIMES: Yes; starting in April of 2001 --

DR. APOSTOLAKIS: Okay.

MR. GRIMES: -- NEI would provide us comments on what they view as their need for rulemaking. May, we would hold a public meeting and seek a broader input on potential rule changes, and we would intend on throwing the doors wide open.

DR. APOSTOLAKIS: Are we part of the loop?

MR. GRIMES: Not yet.

DR. APOSTOLAKIS: I at least -- personally, I would like it to be between the 5-1 and 7-1 dates.

DR. BONACA: Yes, I think we should be part of that.
MR. GRIMES: Look and see if Dr. Lee is cringing as I put another milestone on our chart.
[Laughter.]
DR. BONACA: Although you have a meeting with us on February --
DR. APOSTOLAKIS: That's way too soon.
DR. BONACA: Yes.
DR. APOSTOLAKIS: I'd like to see the public comments and then the preliminary staff recommendations.
DR. SEALE: 6:15.
DR. APOSTOLAKIS: Good.
DR. BONACA: Okay; so, we go on to that item four on the agenda. Any other questions from members on that?
[No response.]
DR. BONACA: If none, we're going to hear about comparison for Calvert Cliffs and Oconee on some key issues.
DR. APOSTOLAKIS: I have a question.
DR. BONACA: Please go ahead.
DR. APOSTOLAKIS: Has NEI shown any interest in risk informing the process?
MR. GRIMES: It's one of our generic renewal issues is risk-informed license renewal, and it would be towards giving -- basically, NEI would like to get risk credit for changes in scope, aging management programs, need to maintain time-limited aging analysis, so we have basically -- my approach to this has been let risk-informing Part 50 progress far enough where we can see the relationship and then draw parallels to license renewal, but my view is that risk informing Part 54 would be one of those things that we would look at in the context of rulemaking.
DR. APOSTOLAKIS: Okay; so, you are waiting to see what happens to part 50.
MR. GRIMES: That is correct.
DR. SEALE: But if you have a utility who has already participated in a pilot study or whatever and has had an application, and the commission has acted on it for a change based on a risk approach to handling a problem rather than the prescriptive approach, that is an acceptable part of the application, isn't it?
MR. GRIMES: That is correct, because that constitutes a new current licensing basis.
DR. SEALE: Yes.
MR. GRIMES: Which you would then apply the criteria, the scoping criteria to and say what systems structures and components are relied upon to perform these safety functions? Now, it doesn't help you for regulated events, because compliance with station blackout EQ, those things are still scoped in, but if the basic safety functions of the plant have been risk informed, then, I would expect that would translate.
We're still looking at that. We're working very closely with the team that's risk informing Part 50 in order to look at the interface.

DR. BONACA: And I want to point out that, you know, we're ranking like an option two has been utilized to substitute safety-related components from the deterministic parts with the new components. We had a recommendation about two meetings ago about certain requirements that we would expect to see in changing the basis. For example, one thing that we had talked about was credibility of the process. I mean, you could just say this component was here, and now, it is not there anymore; it's something else.

So this is just an example of some of the requirements that we would expect to see, and do you have any plan to have some guidance of that in the SRP, or is it too early to expect that to happen?

MR. GRIMES: Well, at this point, it's been enough for us to simply get guidance on the issue of scoping as it relates to how to view the CLB. i would expect that guidance would continue to be updated as we go into risk informing Part 50 and changing the very foundation of what constitutes safety-related.

DR. BONACA: Because right now, for example, it's not clear to me that some of the applications, you know, with one application that all the decisions that were made regarding certain components, replacing them, have been documented or have a very clear basis of -- what was the basis for that decision, and I think that becomes very important in license renewal space, where you are dropping a component that really should be there because of the deterministic approach, but you don't have a documented basis for why it was changed just because you have an expert panel that made certain decisions.

And probably, they had all kinds of insights for it, but, I mean, certain requirements are -- I mean, it is going to be a pretty sticky issue.

MR. GRIMES: Well, my personal view is as the staff goes forward and risk-informs Part 50, I think that that fundamental question about whether or not it's really a good idea to say that certain things are no longer safety-related is being captured by how do we treat defense in depth and the basic philosophy of how the plant design is maintained, and I really look to that area to help decide how the treatment of the four boxes in risk informing Part 50.

It's fundamentally a treatment issue. So certain things are going to be treated as very important, and they need good inspection programs. There are other things that were traditionally not safety-related, and we now recognize that they need to be treated like safety-related equipment, and then, there is a lot of safety-related equipment that does not need the pedigree that the amount of maintainability and precision that we had classically, and I think that when we look at defense in depth, that's really going to answer that question in terms of how to draw that fine line between the different treatments.

And at this point, license renewal just wants to be staged so that as the current licensing basis changes, we will have guidance that explains how to treat that for a license renewal review.

DR. BONACA: Okay.

MR. GRIMES: Unless there are any questions about generic renewal matters, we are going to move into a discussion about a

comparison of the Calvert Cliffs and Oconee license renewal treatment. There are three issues.

DR. BONACA: Four issues.

MR. SOLORIO: Four issues?

DR. BONACA: Well, we added one, which was the swelling of postilytic components, stainless steel.

MR. SOLORIO: They're not on the slide. They mentioned that they wanted to talk about it earlier.

DR. BONACA: After this part of the meeting.

MR. SOLORIO: So, sorry, it's not on my slides, but the right guys are here to talk about it. Previously, we had been told that there were three areas you all wanted to have a summary of how we dealt with them so you could possibly see a range of dealing with these issues. Today, Barry Elliot and Allen Hiser are going to -- Allen is going to talk about CASS. I'm just going to quickly summarize the fatigue and also mention the similarities and differences we found with one-time inspection, and I used the acronym ARDI there, but it really should have been one-time inspection, because that's not what Oconee uses as the terminology.

MR. HISER: Regarding management of CASS components, I guess the first thing I want to describe is there is sort of a two-step process overall. The first step in the process is determining the susceptibility of the component to thermal aging, and that would take into account the fabrication process and the molybdenum content and things like that of the material itself and also the operating environment. There would need to be a high temperature operating environment.

If a material or a component then is determined to be susceptible, then, it would require some sort of aging management. If it's not susceptible, then, the assumption is that the fracture toughness is adequate; that there should be no problems throughout the license renewal period.

Now, on the left hand column are the four classes of components that are fabricated from cast alstinitic stainless steel. The first three, piping, valves and pump covers and casings are basically pressure boundary components, so they have the 2,000-plus psi pressure, whereas the reactor vessel internals do not see any pressure retaining characteristics, but they're there for other purposes, so they see different sorts of loads.

Now, regarding the piping, Calvert Cliffs proposed basically a three-option management program. First of all, if the component is determined to be susceptible, then, it would be subjected either to supplemental explanation in conjunction with the flaw tolerance evaluation or a full leak before break evaluation, or Calvert would just replace the component.

DR. SHACK: Where do you get this CASS typing?

MR. HISER: Surge line and various nozzles, things like that.

In contrast, Oconee has no CASS materials in the piping

Regarding valve bodies and bonnets, Calvert, again, looking at susceptible items, would provide the same three options as with the

piping, so either an examination and flaw tolerance, a leak before break evaluation or a replacement. In contrast, Oconee or Duke Power has proposed to use the current ASME Section 11 requirements. And basically, staff has found that to be acceptable. And let me sort of jump ahead for a minute. With pump covers and pump casings in both cases, both applicants are either proposing to use the current ASME Section 11 requirements or Code Case 481, and regarding valves and pumps, pump covers and casings, we found that the overdesign on those components is so great that the current requirements are sufficient, no matter how -- the toughest would have -- no matter how low it could degrade during operation, it still is sufficient.

Regarding vessel internals, to tackle the simplest one first, Duke Power has proposed a supplemental examination of a sample of all of the items composed of CASS, so in this case, they basically are assuming that everything is susceptible, and they're just lumping everything into their inspection scope. The sample size examination method and acceptance criteria would be determined by reactor vessel internals aging management program, which is basically a research program that the B&W owners' group has initiated.

In contrast --

DR. SHACK: So they haven't quite defined what it is they're looking for when they do this supplemental exam.

MR. HISER: That is correct; what they've done is lay out a process to determine the sample size examination method and acceptance criteria. They don't have the details at this point, mainly because some of the mechanisms they want to do additional research to determine susceptible areas and, yes, where they could or should focus their inspection.

In contrast, BG&E has an approach that's really, I guess, in line with the piping. First of all, with the internals fabricated from CASS material, we have the thermal aging and brittlement, and we also have neutron fluents on the components. The two of those embrittle the material in somewhat of a synergistic approach, and so, you really need to consider it a little bit differently from the non-irradiated components. So the first criterion that they have proposed is to look at the neutron fluents. If it's below 1017 neutrons per centimeter squared, then, the assumption is that neutron embrittlement does not contribute. If it's greater than that fluence level, then a synergism of thermal and neutron embrittlement has to be considered.

If it's only thermal embrittlement, then the same susceptibility criteria used with the piping would have to be justified as being applicable to the internals, and if it's found to be susceptible, then some sort of a supplemental exam would be required, and at this point, they proposed a visual enhanced VT-1 approach. If thermal and neutron embrittlement are both contributing, then we have a stress cutoff that BG&E has proposed, that the stress under all design conditions is low enough that should cracking occur -- well, cracking probably wouldn't occur because the stressors are so low, but even if there was something there that would not propagate, then no supplemental aging management program would be required.

If the stresses are high, then supplemental examination

would be required, and again, the proposal at this point is an enhanced VT-1.

DR. POWERS: Can you tell us the basis for selecting the 5.5 psi?

MR. HISER: Basically, we were looking for a low stress level. Many of the components in the internals are compressively loaded under normal operating conditions, and we were -- the main concern that we have is that should there be a stress reversal due to an SSE or a large break loca, then, you could have stress reversal and possibly put the component under a tensile load.

That basically was just what we chose as a low stress cutoff.

DR. POWERS: So if I have something that's at 5.6, I'd better do anything about it?

MR. HISER: At this point, with this criterion, that would put you into that mode; that is correct.

DR. POWERS: I think I need more help here. It just surprises me that at 5.6, you're going to kick me over into doing a lot of work.

MR. HISER: At this point, given the criteria that have been laid out, that's what would happen at this point. My guess is that there probably would be a submittal requesting relief from that.

DR. SEALE: I'd give them a chance to sharpen their pencil.

[Laughter.]

DR. SHACK: Every time you have a bright line --

MR. HISER: Well, one major difference that I guess I'd like to point out between the two proposals, and realizing again that Calvert Cliffs is a mature review at this point with the final SE issued; Oconee, we're still resolving open items. Calvert has proposed this aging management as a part of the 10-year ASME code ISI program. At this point, Oconee has only proposed the supplemental exams as one-time inspections, and that's something that we are discussing with them.

DR. BONACA: I have a question regarding on the internals, just the philosophy of acceptance. You have the Calvert Cliffs program, which is very detailed. I mean, you could step through it, question it, critique it, and, in fact, we came to some discussion at the end of some of the commitments.

For the Oconee one, you have a promise of a program, and that probably is a great program, but have you seen the program? I mean, the reactor vessel internal aging management program from the --

MR. HISER: We have -- they basically, the B&W owners group has laid out goals of the program and basically the framework of the program. Reactor vessel internals degradation in general has become a major industry program, and where all of the vendors and owners' groups have basically banded together because the issues are the same, there may be different material.

DR. BONACA: And will you have an opportunity to comment on that before you grant the life renewal license to Oconee or if not, what opportunity has the staff to participate in that kind of process of establishing what's enough and what is not enough?

MR. HISER: What we have done with Oconee in particular is

to request periodic updates on the status of that program, the RVI/AMP program. One of our concerns is that in 10 years, the applicant may not have sufficient information to put together that program. We want to make sure that that doesn't happen. So we expect that we will have a lot of interactions with this greater industry program and also with the RVI/AMP just to make sure that the proper issues are being addressed and that things are coalescing in a timely manner.

DR. SHACK: But just in the sheer mechanics, then, you will issue a license with some sort of conditional statement that they will come up with an acceptable program, or you'll trust that they will come up with an acceptable program?

MR. GRIMES: At this time, we haven't finished the resolution of the open item for Oconee, so we don't know what the framework is. But Allen's point is well-taken. For Calvert Cliffs, we've come to a plant-specific solution that we can refer to as the basis for managing the aging effect. For Oconee, they're referring to an owners' group activity where the real hook that we've got is in the resolution of their generic solution that is going to be referred to by several plants, and so, I don't know what this thing would look like yet, but it basically is going to tie them to that generic activity.

DR. SHACK: But what happens if you don't come to an acceptable resolution of the generic activity?

MR. GRIMES: Then they're going to have to -- then they couldn't fulfill the commitment that is now part of their new licensing basis.

MR. ELLIOT: The research is going to lead to an inspection or recommendation for inspection or not to have inspections. At that point, they will recommend something. Then we, as regulators, will do our regulatory duty is look at their thing and decide what action we have to take at that time.

DR. BONACA: The reason why I'm pursuing this is that to the degree that you have plant specific or grouping that you have, you may end up with hundreds and thousands of commitments out of there, okay, two programs which you have to verify at a later time, and participants in the program just -- I'm trying to understand really this issue that I opened up the meeting with on how, you know, this stuff really has to review its way of getting back into the process in an effective way that is feasible, that is not overwhelming, you know, from a resource 10.2.

Again, you know, I look at the left column; I like that. I understand what they're going to do. I agree with that, and I go with it, and I look on the right --

MR. HISER: And one aspect is that BG&E is also participating in this industry program, and within their proposal for the reactor vessel internals aging management, they explicitly state that if the results of the program indicate that this inspection is not necessary, then, they would come in requesting relief from that.

My expectation is that what will happen is the industry will develop an approach to manage reactor vessel internals not only for CASS materials but probably void swelling and some of the other issues that we have, and that probably will be the approach that all licensees will want to take.

DR. BONACA: You know, I would think that maybe the bottom line is that clearly, discovery, you know, in the next 30 or 20 years, discovery of new phenomenon or some degradation in some respect or changes would cause significant changes to the commitments that are going to be made, and again, we talked about 50.59 as a decent process to get into, but I think it's a complex that you may want to reflect on, you know, do you need anything else?

MR. GRIMES: That is a question that we've faced and will continue to face. The purpose of the Calvert Cliffs safety evaluation, we found that the commitments fit in a category that we believe that they could be managed by 50.59. We noted that for the future actions, 50.59 doesn't deal with this question about timing and that we needed a provision for that. When we finish Oconee, we're going to face that same question. We always have the same option of setting out separate license conditions for particular things, actions that the commission should be directly involved in deciding, but to the extent that, as Dr. Bonaca has pointed out before, we're trying to rely on process, project how that process is going to continue to evolve between now and the end of the current license term and then manage the system structures and components beyond that point, we're trying to keep it simple as well.

We can keep it simple if we get the commitments as specific as possible and tied to specific activities and actions that the licensees are going to manage in their licensing basis in the future.

DR. BONACA: Okay.

MR. GRIMES: The FSAR issue is one that NEI continues to believe that we don't give enough credit for commitment management processes in the way that the utilities, manage their plant designs, so rather than complicate it with trying to develop more devices, we're going to rely on 50.59 and license conditions as the two mechanisms for commission involvement.

DR. BONACA: Okay; do you want to -- okay, any more questions on this?

[No response.]

DR. BONACA: If not, maybe we can talk about swelling now or --

MR. HISER: Actually, if you'll put that slide back up, we have received similar responses from both BG&E and Oconee, and the program that I talked about, the industry program on reactor vessel internals, one of the tasks that has been undertaken on that is an assessment of void swelling, looking at material properties, looking at impacts on core internal structures, things like that. Both applicants have committed to participation in the industry programs. They have committed to assess the need for any supplemental examination programs and then to implement those programs as needed during license renewal. I think we have found that to be acceptable given the uncertainties involved at this point and the scope of the problem.

DR. POWERS: If I wanted to get myself up-to-date on the latest in void swelling, what would I read?

MR. HISER: Probably anything from Dr. Garner, P&L.

DR. SHACK: Just do a literature search on Frank Diamond, and then, you can watch how Frank goes.

[Laughter.]
DR. SEALE: Bill!
[Laughter.]
DR. BONACA: All right; okay, thank you.
[Pause.]
MR. SOLORIO: Earlier this afternoon, you heard me mention and John explain in detail the Calvert Cliffs fatigue management program. Oconee has some similarities and some differences notably prior to exceeding design cycles for corrective actions and also with respect to monitoring design transients specified in the FSAR, and they also propose to implement the GSI-190 resolution, and I guess they have some other particular components that they're subjecting to apply the environmental factors to different there than Calvert Cliffs does.
DR. POWERS: Their research should have taken a copyright out on the ANL environmental factors, and they would probably be wealthy here.
MR. FAIR: The ANL -- this is John Fair again, by the way -- the ANL factors are very similar to factors developed by the Japanese. They're all evaluating the same data, and so, although they're published in ANL NUREG reports, the data is from other sources.
DR. POWERS: Just trying to find a way to stretch the NRC's research budget a little bit.
DR. SHACK: As a matter of fact, the Japanese get very unhappy to see themselves referred to as ANL environmental.
DR. SEALE: I bet!
[Laughter.]
DR. SHACK: Doctors Higuchi and Aida sort of ding us about that quite often.
DR. BONACA: All right; so essentially, Oconee has pretty much the same program.
MR. FAIR: Yes; the programs are just slightly different in that in the monitoring, the Calvert has critical high usage factor components that they are monitoring, and they are monitoring based on the usage factor, whereas Oconee is just monitoring the cycles of design basis transience from the FSAR.
DR. BONACA: I mean, how do you --
MR. FAIR: As long as you monitor the design basis transience in the FSAR, and you don't exceed them, you won't exceed the usage factor of one.
DR. BONACA: Okay.
MR. FAIR: The advantage of Calvert's is they get to take some conservatism out of the analysis by monitoring usage factor.
DR. BONACA: But they look at the critical components.
MR. FAIR: But they look at the critical components. The GSI resolutions, again, are similar. The factors applied at Calvert at the monitored locations, the stainless steel locations, which are the critical components as far as the factors go, and what Oconee did, because they're not actually monitoring specific locations were to apply these factors at the locations recommended in our NUREG 6260, and the way those factors are applied is just to divide the number of allowed cycles by that factor, and both have proposed either to implement these

plant-specific programs or implement the resolution of GSI-190, whichever imposes the least restrictive requirements.

DR. BONACA: All right.

MR. FAIR: The last thing you all asked us to talk about and to give you an idea what the spectrum was was one-time inspections, and both Calvert Cliffs and Oconee are similar in that they use them for similar reasons to rule out the occurrence of aging effect.

DR. POWERS: That has to be the most amazing thing, to rule out that something is not occurring.

[Laughter.]

DR. POWERS: Does that mean is occurring?

MR. SOLORIO: Well, I guess there are reasons that they believe that there is a possibility they can't -- maybe the chemical environment would make it plausible or potentially plausible, but they haven't seen it before. So therefore --

DR. BONACA: That doesn't belong there.

MS. COFFIN: Who wrote that?

[Laughter.]

DR. APOSTOLAKIS: Remind me please what ARDM is.

MR. SOLORIO: Age-related degradation mechanism.

DR. APOSTOLAKIS: Aging?

MR. SOLORIO: Age-related degradation mechanism. I believe that's a --

DR. APOSTOLAKIS: And why is that different from an aging effect?

MR. SOLORIO: Well, what I'm using is a Calvert Cliffs acronym, terminology, yes.

DR. APOSTOLAKIS: Is there a difference?

MR. SOLORIO: Remember, I'm the Calvert Cliffs guy, so I don't think in terms of Oconee as much.

DR. POWERS: It certainly reads like CASS speech.

DR. APOSTOLAKIS: So this will address the question what if something you don't know about is happening?

[Laughter.]

MR. GRIMES: Let me attempt --

DR. APOSTOLAKIS: No, that's what it does.

MR. GRIMES: Let me attempt to clarify, although I can't promise, but I'm going to try.

[Laughter.]

MR. GRIMES: These one-time inspections were intended where there was an aging effect that could not be completely dismissed, but it's not that we don't know it's happening. We know it happens, but we're not certain whether or not it happens to the extent that it needs to be managed.

DR. APOSTOLAKIS: An example of that would be --

MS. COFFIN: A stainless steel valve body, because it's -- it may have stagnant water in it, you know, a couple of days a year. But it's ARDMs that are expected to be very minimal because the environment is generally very benign, or the design is very robust, but it is an ARDM that could occur, and it's something that they want to categorically rule out that it needs a full-blown aging management

program.
DR. POWERS: There should be some ARDMs that are sufficiently remote that you don't ask for an inspection and others that are not so remote that you're afraid to go without an inspection. I mean, there is a dividing line between the two. Can you tell me how you decide that dividing line?
MS. COFFIN: I think a lot of it just comes down to engineering judgment, and in terms of Calvert Cliffs, I think they went above and beyond in terms of if they couldn't categorically rule something out, they put it in a one-time inspection, and I think they covered just about every ARDM known to a corrosion engineer.
DR. POWERS: In other words, their threshold, whatever it was --
MS. COFFIN: Was very low.
DR. POWERS: -- was low enough that it didn't cause you to ask them to specify it.
MR. SOLORIO: Also, I think through the many conversations I've had with the Calvert Cliffs people, there is a thing about, well, is this aging effect, it may be occurring, but is it really occurring such that we've got to worry about it? And that is part of what the RD is doing now.
DR. APOSTOLAKIS: Help me feel a little bit better. What if it is occurring, and 3 years from now we have to worry about it? Don't we have programs in place that will alert us to that fact?
MR. SOLORIO: When you say programs --
DR. APOSTOLAKIS: Or something that will tell me that 3 years down the line, I do have a problem, not now, 3 years.
DR. SHACK: I mean, you would only do this on components that you're not inspecting for some other reason.
DR. APOSTOLAKIS: And if they fail, what happens?
MR. SOLORIO: They have a site corrective action process that dispositions that.
DR. APOSTOLAKIS: I mean, I'm not in trouble if they fail, am I'
DR. SHACK: We're risk informed here. We don't like water on the floor, George.
[Laughter.]
DR. SHACK: You know, whether the core melts or not, we don't like water on the floor.
DR. APOSTOLAKIS: No, no, how about the cornerstones? I'll grant you the cornerstones. I don't want an initiating event. Now, some water on the floor, I don't know.
DR. SHACK: This is a barrier. We don't degrade them.
DR. BONACA: But, you see, for mechanisms, like, for example, for the issue of fatigue, I mean, they have full programs. These are, if you look at the details of them, really is unlikely that you have that phenomenon taking place, or if it does, it looks like for whatever they've seen, it's very superficial; it's not going to go there. So that's why they justify the one-time inspection. The bigger issue is what if you don't confirm, in fact, that your presumption? And we discussed that before. So the important thing is to have in place a

change process that allows not only for the applicant to change his own program if he finds out that the RD in fact confirms that there is a problem but also for the staff to participate in reviewing it and accepting it.

MR. GRIMES: We wouldn't expect the staff to be involved in reviewing and accepting it. Remember that this is -- these are aging effects for which there is no clear evidence that it is such a severe problem that it warrants a program to manage it over time. These are ones that -- these are aging effects that we could not dismiss a priori. And so, we have to say --

DR. SHACK: This conjecture is if your inspection in fact showed that it was much more severe than you expected for some whatever reason.

MR. GRIMES: And in the event that this one-time inspection finds something sufficiently significant that like any other discovery of a nonconforming or degraded condition in the plant that affects an intended safety function, then, the quality assurance process says what is the problem? What caused it? What do I have to do to prevent its occurrence? And it becomes self-correcting, and that's why the commission felt that license renewal could just focus on, you know, looking at aging management programs, but the regulatory process is going to continue to learn; going to continue to react; going to continue to improve programs as new knowledge comes forward, and so, we don't need to look for -- if you remember the 1991 version of the rule, it says identify all age-related degradation unique to license renewal.

We said we can't do that. We're not that smart. We don't know what it is. So this is simply a process piece that says, well, it may not; let's go look later. If we find something, we'll fix it.

DR. BONACA: I'm not proposing that you have no regulation; and certainly, you have ways to disseminate the information, to send out bulletins or whatever now you send out. I know there were changes there, too but --

MR. GRIMES: That raises an interesting corollary, and that is now, as we do generic communications, and we identify problems, and we try to decide, well, what do we need to do to fix them, we need to also consider that there will be renewed licenses out there that have aging management programs, and they need to be provided for as well.

DR. BONACA: I'm convinced that as we go into the extended period of operation, we will discover a lot of things, and so, that's why I think a lot of the questions we had today were focusing on that issue, on not only a corrective action program and the effectiveness of it but also some degree of involvement that the staff will have to have, and you're telling me that you feel that the current processes are adequate for you to get an involvement, and that's fine; okay.

MR. SOLORIO: I guess what we felt the major differences to be is kind of in their approach. Calvert Cliffs kind of does it by, you know, by system. They look at what they have already for managing aging and then come up with an additional one-time inspections where they don't have an existing program, and whereas Oconee apparently does it by material and aging effect, they just have a different way of running their aging management programs there. So, they go off and look at

piping in one fell swoop and then, wherever it be, or they don't have inspections; I believe they were coming up with more other -- where they didn't have existing programs, they came up with one-time inspections.

DR. POWERS: Both of these applicants have some reason for being very generous in which things they would inspect for. The next, as people come down the pike later on, they're going to say gee, I don't want to do all of these inspections, because nobody ever finds everything to begin with, and it takes a lot of money, and so, I want to be less generous, in other words.

How does he decide what things he should not inspect for and still have people comfortable?

MS. COFFIN: I think safety significance would come into play there in a big way, like the RV internal ARDIs or small bore piping inspections, that might be a way of deciding. That's not a very easy question to answer.

DR. POWERS: I think it's one you're going to have to answer.

MS. COFFIN: I think you're right.

DR. POWERS: Because the next guy down the line is just not going to want to do all these things.

MR. GRIMES: The question usually is posed to us from the other side of the fence in terms of are you going to preclude regulatory creep from thinking of more things, more one-time inspections. As the staff gets smarter in terms of reviewing the programs, how do we know you're not going to expand the list and come up with even more things for us to have to inspect?

And that gets back to capturing this experience in the SRP, developing guidance in terms of where we have seen one-time inspections. Some utilities may decide that they want to -- well, in a number of cases, we saw where it might have been argued that the aging effect was not plausible or applicable and instead to just include it in a system walkdown or they expanded their procedure to basically consider this, too, as you're going along, because it really doesn't cost them anything.

So we're constantly, again, going to have to calibrate that point and say, you know, is this both the necessary and sufficient basis for --

DR. SEALE: Somebody is going to come at you with a risk informed aging inspection plan.

MR. GRIMES: That changes every time the IP is updated.

[Laughter.]

DR. SEALE: Yes.

DR. POWERS: I mean, that's the way things are.

MR. GRIMES: That's why we concentrate on process.

DR. BONACA: All right.

Any other questions for the presenters?

[No response.]

DR. BONACA: If not, I would like to thank all of the presenters here for the information you provided, and I would like to move on to the discussion of the Calvert Cliffs applications among the members. I would like to go around the table and see if there are

specific comments, and then, at the end of that, decide what we are going to ask the staff to present us --

DR. APOSTOLAKIS: Is the staff requesting a letter?

DR. BONACA: Yes, yes.

DR. SHACK: Yes.

DR. BONACA: The ACRS will be out.

Let's first of all discuss what we would like to hear at the full committee meeting, okay?

[Pause.]

DR. BONACA: What should we hear at the full committee meeting, first?

DR. APOSTOLAKIS: I don't want to see those tables again.

DR. SEALE: No.

DR. BONACA: You don't want to see the open items?

DR. APOSTOLAKIS: No.

DR. BONACA: Okay.

DR. SEALE: How long do we have?

MR. DUDLEY: I think an hour and a half.

DR. APOSTOLAKIS: No.

DR. BONACA: Okay.

DR. SEALE: How long do we have?

MR. DUDLEY: I think an hour and a half.

DR. SHACK: Well, everybody's here except John.

DR. BONACA: Two issues. One, in October, we had a presentation on the generic issue list, okay? Then, there may be a summary that would be valuable for the full committee. It's not specific to the G&E application.

MR. GRIMES: That's all right. I have to do one for the steering committee anyhow, and I can bring that.

DR. BONACA: Any suggestions?

DR. POWERS: I'm going here with a thought that the kind of presentation the committee needs is a statement of what are the aging issues at Calvert Cliffs, and what things will limit the amount of time that plant can run?

DR. SHACK: They're only worried about whether they can run 60 years.

DR. POWERS: What I'm asking for is --

DR. KRESS: Those are only the replacement components that we have to project.

DR. POWERS: Yes; the replacement components, I assume, get replaced as they needed to.

DR. KRESS: They're talking about fatigue and embrittlement and -- I think it's a very limited number.

DR. SIEBER: And for Calvert Cliffs, remember, they've said they could replace the CASS components if necessary.

DR. POWERS: Something eventually limits this plant.

DR. SEALE: If it's unique to this plant that you might not find some other place.

DR. APOSTOLAKIS: What's the CDF again for this plant?

DR. POWERS: 2 x 10-4.

DR. SHACK: Again, why do we need to know that if the

decision is, you know, do you grant the license for 60 years, and the question is is it good for 60 years?

DR. POWERS: Because I'm sure they're going to ask gee, if it's good for 60, come back for 80. Will it break in 61?

MR. GRIMES: We went through this philosophical problem when we amended the rule in 1995, and the answer that we give you in terms of what's going to limit the life of this plant is going to be when the economics say that the plant is no longer economically competitive. It might still be just fine. As a matter of fact, I think that Mr. Kadak is still annoyed that they say Yankee Rowe got shut down because of license renewal. Yankee Rowe got shut down because they decided it wasn't going to be economically competitive, and we're going to say we've identified -- we've got this bit map of programs that manage aging effects, and we rely on these processes, and if something comes along, we don't know what might limit the life of the plant, because it might be something that we don't know about now.

DR. APOSTOLAKIS: So there is no --

MR. GRIMES: There is no life-limiting component here, save the PTS projections are currently at 48 effective full power years, as you pointed out. If they change the fuel management strategy, you know, they might bump up into the criteria, but they bump into those criteria at some point in the future where they may have the option of replacing the vessel.

DR. BONACA: Although, again, I mean, the economics may be such that you have to do so many things to keep it up. Why don't you keep --

DR. POWERS: I'm willing to speculate some, but I'm not willing to speculate too much. I mean, it seems to me that I think we want to know, when we sign off on these things, we ought to know more than it will last for 60 years.

DR. APOSTOLAKIS: Is there any estimate of the remaining lifetime of the plant?

DR. SHACK: Well, I mean, it lasts for 60 years with margins that are acceptable. I mean, it's not as though it lasts for 60 years and, you know, the vessel is going to turn into glass in 61. You know, at 60 years, the PTS limit is still below the screening limit.

DR. BONACA: The presumption is all the regulatory margin is totally intact. That's what it is at any time.

DR. SIEBER: I think it's even more liberal than that. What you've done is say we're going to monitor and repair all of the active components, and now, we've set up an inspection program and a way to monitor the passive program. Therefore -- components, excuse me -- and therefore, if we abide by the conditions of the license and all of these commitments, then, the public health and safety is assured, reasonably assured.

DR. UHRIG: Presumably, it can run as well at 60 years as it did at 6.

DR. SIEBER: It should start at day one, and I think there was, at day one, some assumptions as to whether you needed to use back door or otherwise deal with passive components, but when you get to 40 years, you want to assure yourself that there is -- there is margin or

at least identify that you have to monitor beyond that point. And so, I don't think how long it will last is a factor so much as is the degree of public health and safety preserved by what the license renewal has done?

DR. POWERS: But you have no measure of degree of public health and safety. The question I have a measure on --

DR. SIEBER: There is a presumption, as we all know.

DR. POWERS: I want to know what limits the life of this plant.

DR. SHACK: In what sense? I mean, when will it stop meeting all of the regulatory requirements? You know, when will it stop being economical? What do you mean what limits the life of this plant?

DR. BONACA: The whole aging program is intended to maintain the regulatory margin. Anytime you get close to where you think you are eroding it, we have to do something, which means you have to --

DR. SIEBER: Remediate.

DR. BONACA: Replace, yes, remediate; that's the right word.

DR. KRESS: I think it's when you quit meeting regulatory requirements, and I think those would be either the PTS requirements or the fatigue, one or the other. It's going to be one of those two.

DR. SIEBER: You can remediate everything. So it really comes down to money, you know. Am I going to --

DR. POWERS: Without remediating, okay. Obviously, that's --

DR. BONACA: I think it is a good question in terms of -- because, I mean, the more you look at it, we spend all the time looking at everything, okay? But in reality, you are looking at some, you know, fatigue. I mean, PTS issue on the vessel, a few elements which are global, and they are affecting the main components and may be the reason why probably the plant will be shut down at some point, because simply, you don't want to spend the money to remediate, okay, that component for that issue.

So that would be probably some interesting perspective.

DR. KRESS: I think, Dana, it's probably interesting: how close are we to some sort of cliff? And, you know, if the PTS -- you bump up against PTS really in the year 61, it may not -- as opposed to year 70 or --

DR. SEALE: Seventy-five or 93 or whatever.

DR. KRESS: Because this is a process we've gone through, but we haven't evaluated any uncertainties. Everything is supposed to be conservative in time, so you know there's margin there, you just don't know how much, because you haven't really evaluated. So how much margin do you need? I think it's an interesting question.

DR. BONACA: Yes, it is.

DR. APOSTOLAKIS: Put it in a different way: even if I'm willing to live with a 2 x 10-4 core damage frequency now, are you guaranteeing to me that 20 years from now, it will still be 2 x 10-4?

DR. SHACK: That's different.

DR. APOSTOLAKIS: Why is it different?

DR. SEALE: In what sense, George? That the plant has not

changed, or the standard which we judge to be acceptable has changed?

DR. APOSTOLAKIS: No, the plant; is it still going to be 2 x 10-4?

DR. POWERS: George, there's no question about this plant having any particular core damage frequency.

DR. BONACA: No, I understand that, but I think this is a different way of stating the same question. Is it still going to be 2 x 10-4, or is it going to go up?

MR. GRIMES: The presumption that we're operating under with the process is that it's going to be 2 x 10-4 or better in terms of we've got programs that are going to maintain the plant conditions, maintain the margins. We've added to the current licensing basis; we've got a maintenance rule now that ties back important reliability values in that core damage frequency; you know, the fact that Calvert Cliffs is -- appears to be, you know, a collection of contributors as opposed to, you know, one or two things that we could whack on, I'm sure that they're going to continue to look at that in terms of there's a motivation here for the utility to understand the plant behavior well enough because they basically want to be able to say we're going to know when O&M costs are going to make us make this plant uneconomic.

They don't want a cliff either.

DR. BONACA: No, I would raise the point, however, that in the success criteria in PRAs, wherever you have information on best estimate, you use that. Then, we give you an example on containment, for example; containment, typically in design basis, the regulatory limit is the design of the containment, if there is any value, 50 psi.

We, however, take credit for 120 psi or whatever, we believe it's, in fact, a realistic limit and now --

DR. KRESS: You think that limit might change with age.

DR. BONACA: It may change with age, okay?

DR. KRESS: So the risk status is changing.

DR. BONACA: That's right; I mean, it may. It may.

DR. KRESS: You're managing it.

DR. BONACA: That's right; so you're maintaining the regulatory margin of the 50 psi, and you're not going to bump into it. You're far from it, but you're eating some of the margin outside of that.

MR. GRIMES: The same uncertainty about, you know, what the behavior of the containment is going to be under design basis and severe accident conditions is still going to be there. We would hope that that knowledge base is going to continue to grow, and it is the uncertainty in LERF, not necessarily make it larger but, you know, time will tell, and the more that we learn about how much margin or how much certainty or uncertainty there are in the best estimate values, we would expect are going to continue to improve our understanding.

That's why we try to focus on the processes for understanding what the plant conditions are and performing remediation so that in parallel, the reduction in uncertainty about what really contributes to risk is going to help to better manage the plant maintenance.

DR. KRESS: I think in principle, you're right, but where I

come from, it's fatigue and so on are the primary packing system. But you can't really do it to the extent that you are going to reduce the uncertainties very much, and as time goes on, I'm sure the probability of initiating frequency of the loca is interest.

DR. SHACK: The delta is probably within the 1174 limits.

DR. KRESS: It's probably pretty dog gone low. That's the point, and that's the point which he's making, and as long as you stay within the licensing renewal process of inspecting and looking and calculating how much it can be, as long as you do that correctly, you're probably staying within limits.

DR. BONACA: The regulation may keep the margin -- no difference between 55 years and 55 years, because for some components, you have studies. You're remediating, and you have some other component-like vessel, it's a different story. Sitting there, you're not mitigating anything and monitoring its aging.

DR. APOSTOLAKIS: As I recall, in rule 54, 50.54, says that the applicant must demonstrate that the current levels of safety are maintained.

DR. SHACK: For current licensing basis.

DR. APOSTOLAKIS: No, safety levels. There is a safety there, no?

DR. KRESS: Does it say that?

DR. APOSTOLAKIS: Yes. Get your book. And I have three experts here telling me that the frequency of the loca increases.

DR. BONACA: So there is a presumption here of adequate protection?

DR. KRESS: It's a range.

DR. BONACA: Did we get 50.54?

MR. GRIMES: Part 54?

DR. POWERS: Should the loca -- should the loca occur, and the plant survives a loca; that's how they're designed.

DR. APOSTOLAKIS: Yes, but the current level of safety is not maintained.

DR. POWERS: No. It's the ability to survive a loca.

DR. APOSTOLAKIS: That's one interpretation of safety.

DR. POWERS: But it happens to be one that figures strongly in our regulations.

MR. GRIMES: I know that there is somewhere in part 54, the statements of consideration all talk to safety level, and I will tell you our safety evaluation was geared toward developing the finding in 54.29 that says actions had been or will be taken to ensure that the aging effects for -- and then, it refers back to scope -- to maintain their plant safety, safety level.

We've used the safety benchmark that we're using is consistent with the current licensing basis.

DR. APOSTOLAKIS: The words are slightly different. There is one sentence that's a full paragraph, and it reads as follows: structures and components will be managed to maintain the CLB such that there is an acceptable level of safety during the period of extended operation, not the same.

DR. KRESS: Exactly.

DR. SHACK: You would never write a law that says you maintain the same.

DR. APOSTOLAKIS: Why not? And now, you have a question of what's acceptable; come on. If you really want to --

DR. SHACK: George, you don't write it because you're always aware of some guy like you coming along and measuring it. And if you measure it to what it should be --

DR. APOSTOLAKIS: Well, I mean, if it says an acceptable level of safety, and the definition of acceptable is what we say is safe, then it's fine. Now, if you say you have to have 54.29 with the standards of issuance of a renewed license --

MR. GRIMES: The whole focus of the safety evaluation is getting to that conclusion.

DR. BONACA: Do you have enough there?

[Laughter.]

DR. SHACK: Eventually, the thing that you will no longer be able to meet is probably the vessel.

DR. APOSTOLAKIS: The vessel is eventually --

DR. SHACK: Eventually, yes, sooner or later.

DR. APOSTOLAKIS: Don't say words like that.

DR. SHACK: Well, I mean, I can even project it.

DR. APOSTOLAKIS: Can you project it?

DR. SHACK: I mean, I don't know what it is.

DR. APOSTOLAKIS: Can you project it?

DR. SHACK: Well, yes, I can project it.

DR. APOSTOLAKIS: Give me an idea.

DR. SIEBER: It can be a margin.

DR. APOSTOLAKIS: Okay; well, give me a margin. Everything has been the same.

DR. SHACK: I mean, you know, they met it for 60 years. My guess is, you know, I can't even remember what the margin was at Calvert Cliffs when they got the 60 years, but they hadn't hit the screening limit. The had -- yes, Oconee was a lot tighter, I think, so, you know, they're out some years beyond 60. I would have to go back, but, I mean, it's a pencil and paper --

DR. APOSTOLAKIS: Some years means 5, 10?

DR. POWERS: You keep asking the question that I proposed that we ask, but you didn't want to hear that.

DR. APOSTOLAKIS: I did what?

DR. POWERS: You keep asking the same question that I asked them to talk about.

DR. APOSTOLAKIS: Yes; we're getting closer to an answer.

DR. SHACK: We can answer that question. I just don't know once you get the answer, what are you going to do with it?

DR. APOSTOLAKIS: Well, I will feel better. Dana's question was what? Sixty-one?

DR. SHACK: If it's 61, and I hit the screening limit, I'm not exactly going to break into a cold sweat.

DR. SIEBER: The question is --

DR. KRESS: One of the Oconee units is very close.

DR. SIEBER: -- along with the NRC, which is what you're

really asking.

DR. KRESS: If it hits in the 59, are you going to stop the -- and do it, do the calculation.

MR. GRIMES: The true answer that I would give you if I were trying to answer that question is I would say, well, there is a majority of folks who believe that the vessel is the limiting component, and it's either going to be a little before 60 if they change their fuel management strategy and don't take remediation, or it's going to be a little bit after 60, because there is still some margin in the calculations, and as you go through time, they will work that out without remediation, unless there are some other components that we are not monitoring as closely that is going to get caught by all of these inspection practices and turn out to be the economic factor that drives a decision to shut the plant down prematurely.

That's our answer. We always look to the vessel as being the limiting feature, and that's where there's a lot of focus on that, but there could be a structural element where it just becomes too expensive to repair or replace.

DR. SHACK: They thought they had the flux problem before, and all of a sudden, they thought the vessel supports were going to be limiting.

MR. GRIMES: I remember when they thought that the resolution of one of the generic safety issues was basically going to make the pads the vessel sits on the limiting component because of the dynamic forces associated with the flow around the vessel. So, you know, anything that we would say about what is life-limiting for the plant is going to start with a, well, whenever it becomes economically infeasible or economically uncompetitive, and it's going to end with probably the vessel but maybe something else, and that's about all we could say, but then, we would turn back to but the commission's rules in Part 54 look to a process of managing the plant so that you'll know how to decide and when to decide.

I remember when we were first putting together the standard review plan in 1975, and there were people saying, well, you know, don't spend a lot of time being concerned about repair criteria for steam generators, because nobody is ever going to replace one. God knows what the economics would do in a deregulated environment.

DR. BONACA: Let me propose, by the way, first of all, there is already a request here from Dana, and I think that's a good one, you know, to talk about aging issues at Calvert Cliffs and the limiting issues, but I also would like to hear about one-time inspections, just because even to look at some of the examples so that we could get a better feeling for, you know, these criteria that we discussed that are, you know, you do a one-time inspection where you don't believe you're going to find something, okay?

Or the other thing I would like to hear about is describe the process a little bit that you're having in place or already in place to assure that commitments are being met and also that changes identified by the plant or discovered, I would say, allows for the NRC involvement. At least we understand what these processes are, I mean, you seem to be very aware of those. I would like also to hear, if it's

possible, why the guidance -- and you don't have to spend a lot of time on that but the current guidance of 50.59 doesn't really seem to be adequate to address this new, you know, license renewal phase.

One question that I asked before about ASME's Section 11 ISI, the frequency 10-year periodicity, I mean, nobody may have that answer to that question. So, maybe it still puzzles me.

DR. KRESS: The technical basis?

DR. BONACA: Yes; except it is a nice even number. You know, 20 was too much, and 10 is better than 20. I mean, I could bet you that there is some of that when the interval was --

DR. SHACK: Well, you also have to remember, though, that when they have an inspection for cause, the intervals are really set on a much more rigorous basis. I mean, you know, if you have an erosion-corrosion program, it's not every 10 years; it's because you know -- but the every 10 years is almost let's just go out and look at this piping; we don't think there's anything wrong with it --

DR. BONACA: Okay.

DR. SHACK: -- but we're just going to keep looking at it anyway just in case we're wrong and so --

DR. BONACA: You're saying that there is a criterion or process within the ASME to accelerate --

DR. SHACK: Yes; I think wherever they've really identified a true cause and a true degradation mode, there's typically an augmented inspection program that, you know, doesn't rely on an arbitrary selection of time. It's really much more mechanistically driven.

MR. GRIMES: The same is true with the surveillance requirements and technical specifications. They started off with some arbitrary time frames that were established on the basis of well, we can check these each refueling outage; you want to check this stuff sort of on a quarterly basis.

But where the surveillance results have identified a need, for example, two decades worth of studies on diesel generators to establish just the right frequency, you know, not too much, not too little for testing diesel generators, so that's generally what we find in in-service inspection and other practices as well. We find that these surveillance programs start off with a, you know, this looks like a good frequency and then adjust itself. It's self-correcting.

DR. BONACA: Okay; I think we heard about -- I'm sorry.

DR. APOSTOLAKIS: One last chance here.

DR. BONACA: Yes.

DR. APOSTOLAKIS: The core damage frequency is 2 x 10-4, and that has excluded passive components, which is typically done in PRAs, right? PRAs, usually, we don't include them.

For the next, I mean, 20 years beyond the 40 year license, will I be justified in ignoring the passive components and still say that it's 2 x 10-4?

DR. KRESS: I think the answer is yes, because the PTS rule is designed to keep that from -- it's 10-6. Now, even if you buck up on this, and I think it's even less for the T, it's even less than that.

DR. APOSTOLAKIS: Okay; so --

DR. KRESS: So I think even though you're bucking up against

the limits, you're still not adding a significant amount to the 10-4 for those two components.

DR. SEALE: That's what the process is trying to assure you of.

DR. APOSTOLAKIS: Well, I don't know. It could be a 59 here; it could be 65.

DR. SEALE: Well, yes, but the caveats were there, too.

DR. BONACA: All right; okay. Do we need to hear about GSI-190?

DR. SEALE: We're going to hear about that separately.

MR. GRIMES: Yes, you're going to hear about that on December 3.

DR. BONACA: All right.

MR. GRIMES: Mr. Wesman and Mr. Wichman kept getting real nervous when --

DR. BONACA: Yes; and I am satisfied for what Calvert Cliffs is doing. I mean, I like what they're doing about that. And by the way, is that factor a 1.5, the one that accounts for the fatigue specific, the environmental -- I notice in the open item closure that they're saying that the criterion is multiplied by a factor of 1.5. Anyway, I don't want to go into details. That's probably what -- what the adjustment is, just to reflect this closure on GSI-190.

Have we given you enough to present?

MR. GRIMES: Oh, yes.

[Laughter.]

MR. GRIMES: Definitely 2 hours with the dialogue.

[Laughter.]

MR. GRIMES: And also, and I will ask BG&E to be prepared to speak to the question about what is life-limiting and the commitment management process from BG&E's end, and the NRC staff will talk about commitment management CRB maintenance from our perspective.

DR. SEALE: Very good.

DR. BONACA: Any other issues that --

DR. APOSTOLAKIS: Did we ever get that summary of the BG&E PRA? I remember vaguely we did. But we don't have that full PRA, do we?

MR. DUDLEY: Yes.

DR. APOSTOLAKIS: Do we have the full PRA?

MR. DUDLEY: Yes, we do.

DR. APOSTOLAKIS: Oh, we do?

MR. DUDLEY: I think we do, yes.

DR. APOSTOLAKIS: Was it submitted as an IPE? Yes; the summary, I know we got, but how about the full PRA?

MR. DUDLEY: The staff has it.

DR. APOSTOLAKIS: The staff has it?

MR. DOROSHUK: My name is from Barth Doroshuk from Constellation Nuclear, and I'm on the Calvert Cliffs license renewal project.

DR. BONACA: Let me go around the table a moment now and see is there any other issue that we have not discussed that we want to raise for inclusion in a draft letter? I'm trying to put together a

letter at some point. We discussed the one-time inspections; processes to get the NRC involvement and to change this; we talked about environmentally-assisted fatigue effects, closure; GSI-190; and as the meeting, I would like to put a recommendation that we would like the program that they have in place, the plant-specific one.

We adopt the interim update of the LRP; I mean, clearly, the standard review plan that they're doing it now.

DR. SEALE: Yes.

DR. BONACA: And then, the issue of guidance for determining SSCs for plants with a risk-informed CMP. That's a different thing, and we will want to include that in the letter for Calvert Cliffs.

Any other issues that you would like to consider for inclusion in the letter for Calvert Cliffs?

DR. UHRIG: We're not going to deal at all with the active components? That's already taken care of?

DR. BONACA: That's right, active components, yes.

DR. SEALE: It's maintenance.

DR. UHRIG: I was wondering specifically about cables. There was some discussion of that originally.

MR. GRIMES: We have cables in the safety evaluation report, not dynamically but from the standpoint of reliance on the environmental qualification process.

DR. BONACA: We will have an opportunity anyway, you know, after the presentation on December 3 to raise other issues if you would like to bring them up. What I would like to do after the meeting is make a copy of these three pages where I have some of these issues and distribute them to you and please add whatever you feel you would like to add.

DR. APOSTOLAKIS: Are you going to send the draft of your letter before we come here in December via email?

DR. BONACA: What I would like to do tomorrow morning, tomorrow at some point, Bob and I are going to sit down and try to draft a letter.

DR. APOSTOLAKIS: So you will send it beforehand?

DR. BONACA: Yes, definitely. Some of the issues are here in these three pages, okay? They have to be rewritten somewhat but --

DR. APOSTOLAKIS: I would like to see that letter. I mean, if you guys want to do it tomorrow, then, great.

DR. BONACA: Well, you know, we are debating here, because we are so anxious to hear about ATHEANA that, you know, we don't want to --

[Laughter.]

DR. BONACA: -- take time out of that. I'm not kidding about that.

So it will come out sometime. Okay.

DR. KRESS: Is this the last letter we're going to write on the Calvert Cliffs?

DR. BONACA: Huh?

DR. KRESS: Is this the last letter, the final one?

DR. BONACA: Yes; we are not writing any other letters.

DR. KRESS: My advice is not to muck it up with a lot of

issues --
DR. BONACA: That's right, no, no; in fact, as I mentioned
--
DR. KRESS: You might want to write another letter to the commission saying here are some things to think about that you might not have -- I'd keep the Calvert Cliffs letter --
DR. SEALE: Crisp.
MR. GRIMES: I'd point out that it is our intent that the letter that you send will be incorporated into the safety evaluation report.
DR. KRESS: Just make that crisp and to the point.
DR. BONACA: All right; good.
Okay; with that, if there are no other comments, I think we will adjourn the meeting. Any other comments? No?
[Whereupon, at 4:31 p.m., the meeting was concluded.]